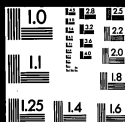


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CENTIMETERS



14:1

Thomas A Edison Papers

A SELECTIVE MICROFILM EDITION PART V (1911-1919)

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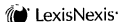
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**Thomas A. Edison Papers
at
Rutgers, The State University of New Jersey
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18 June 1981**

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ISBN 978-0-88692-887-2

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We thankfully acknowledge the vision and support of Rutgers University and the Thomas A. Edison Papers Board of Sponsors.

This edition was made possible by grant funds provided from the New Jersey Historical Commission, National Historical Publications and Records Commission, and The National Endowment for the Humanities. Major underwriting has been provided by the Barkley Fund, through the National Trust for the Humanities, and by The Charles Edison Foundation.

We are grateful for the generous support of the IEEE Foundation, the Hyde & Watson Foundation, the Martinson Family Foundation, and the GE Foundation. We acknowledge gifts from many other individuals, as well as an anonymous donor; the Association of Edison Illuminating Companies; and the Edison Electric Institute. For the assistance of all these organizations and individuals, as well as for the indispensable aid of archivists, librarians, scholars, and collectors, the editors are most grateful.

START

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A Note on the Sources

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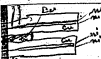
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**NOTEBOOK SERIES
NOTEBOOKS BY EDISON
AND OTHER EXPERIMENTERS**

**Notebook Series -- Notebooks by Edison and Other Experimenters
Disc Plating Experiments
Notebook, N-20-06-12.2**

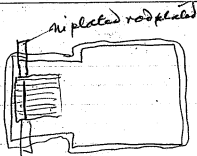
This notebook was used during June-September 1920 by Edison, Walter N. Archer, Frank Detlef, Jr., Howard F. Redford, and possibly other experimenters. The entries pertain to the plating processes involved in the manufacture of disc records. The entries by Edison on the first page consist of a daily record of molds plated in "Bath 7" during June-August. The records, which are continued by Archer, report the date and time, specific gravity, volts, amps, crock temperature, and other conditions during plating. Occasional notes, suggestions, and instructions by Edison are interspersed throughout the early entries. The second part of the book relates to series of experiments conducted by Archer in August in which rubber varnish was used for protection against copper depositing on the backs of the molds. There is also a series of experiments in August and September on transferring molds from the nickel bath to the copper bath without drying after rinsing them free of the nickel solution. One page of instructions from Edison has been inserted into the book. The front cover is labeled "7" and is marked "Disc." The pages are unnumbered. Approximately 100 pages have been used.

Bath No 7.



One thickness
is a thin between
to see Ni face
to Ni face

No 7.



me	SE	Volt	Amp	Temp	Total Amp
40	1170	9.12	24	83	24
40	1170	9.12	25	82	25
40	1170	9.12	26	83	51
40	1170	9.3	27	82	78
40	1170	9.5	26	83	104
40	1175	9.5	27	83	131
40	1170	9.5	26	80	157
40	1170	9.5	27	80	184
40	1170	9.5	27	82	211
40	1170	9.5	22	83	238
40	1170	9.5	27	83	265
40	1170	9.5	27	83	292
40	1170	9.5	27	81	319
40	1170	9.5	26	85	345
40	1170	9.5	27	85	372
40	1170	9.5	27	84	399
40	1170	9.5	27.2	81	426
40	1170	9.5	27.5	82	454

965 7

mi	SS	Volt	Comp	Thm	Total Comp
3					
40	1170	9.5	27½	82	480
40	1170	9.5	27½	81	508
40	1170	9.5	27	81	534
40	1170	9.5	27	83	561
40	1170	9.5	27½	82	588
40	1170	9.5	27	82	615
40	1170	9.5	27	82	642
40	1175	9.5	27	81	669
40	1175	9.5	27	81	696
40	1175	9.5	27	81	723
40	1175	9.5	27	82	750
40	1175	9.5	27	83	777
40	1175	9.5	27	83	804
40	1175	9.5	26	83	830
40	1175	9.5	26	83	856
40	1175	9.5	23	82	867 out

In June 12 - at 9:46 AM
 86.9 Amp in 39 hours
 at 26 Amp in hour
 1st Disc Out 7:10 PM
 June 13

June 13

Op-7 Beth. 2nd of ice in.

M	Lat	Alt	Comp	Temp	Total Comp
200	1175	9 1/2	24	80	
200	1170	9 1/2	25	86	25
200	1170	9 1/2	25	80	50
200	1170	9 1/2	25	81	175
200	1170	9 1/2	25	82	100
200	1170	9 1/2	25	80	125
200	1170	9 1/2	25	80	150
200	1170	9 1/2	25	82	175
200	1170	9 1/2	26	81	201
200	1170	9 1/2	24	80	225
200	1170	9 1/2	25	83	250
200	1170	9 1/2	25	83	275
200	1170	9 1/2	24	83	299
200	1170	9 1/2	23	83	322
200	1175	9 1/2	24	80	346
200	1175	9 1/2	23 1/2	80	369
200	1175	9 1/2	24	80	393
200	1175	9 1/2	24	80	417
200	1175	9 1/2	24	80	441
200	1175	9 1/2	25 1/2	80	465
200	1175	9 1/2	25	83	490
200	1175	9 1/2	25	83	515
200	1175	9 1/2	25	83	540
200	1175	9 1/2	24	82	564
200	1175	9 1/2	24	82	588
200	1175	9 1/2	24	80	612

Op-7

July 7th Bath
23 sec

Time	Side	Volts	Comp	Pump	Total Comp
00	1175	9 1/2	25	86	637
00	1175	9 1/2	24	80	661
00	1175	9 1/2	25	80	686
00	1175	9 1/2	24	80	710
00	1175	9 1/2	23	80	733
00	1175	9 1/2	23	86	756
00	1175	9 1/2	24	86	780
00	1175	9 1/2	23	80	803
00	1175	9 1/2	23	83	826
00	1175	9 1/2	23 1/2	83	849
00	1175	9 1/2	23	82	872

Cord broke when cover was
taken off

Cord broken

6
no plated strap

July 7th Bath in June 13 - 11:00 P

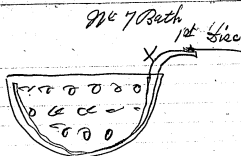
872 Amp in 36 hours
at about 24 Amp Per hour

Out 11:00 O'clock
June 15 A.M.

Eaten off - Eo

The sections at sides a 6 eat
off very much faster. The
corrects the whole thing.
Can't work this - perhaps if
Sides were plated by
steel ribbed might do better
No plating want stand after
over

Everything must be copper
So far only. Anode is solid
and the basket with pieces -



This Bath Contains Copper pieces
that is only a little dissolved
so more can be put in
Weight of X Contact anode
7 1/2 lbs Chips 16 lbs.

June 16 - PM

PM	Volts	Amps	Temp	Total
2:30	1170	9 1/4	20	82
3:00	1170	9 1/4	22	83 22
3:30	1170	9 1/4	23	83 45
4:00	1170	9 1/4	23	83 68
4:30	1170	9 1/2	23	83 91
5:00	1170	9 1/2	24	80 115
5:30	1170	9 1/2	25	80 140
6:00	1170	9 1/2	25	80 165
6:30	1170	9 1/2	25	80 190
7:00	1170	9 1/2	25	80 215
7:30	1170	9 1/2	25	82 240

No 4 Bath

Time	Volts	Ampl	Temp	Total
1:30	1170 9 1/2	25	83	285
1:30	1170 9 1/2	25	81	290
1:30	1170 9 1/2	25	81	315
1:30	1170 9 1/2	25	83	340
1:30	1170 9 1/2	25	83	365
1:36	1175 9 1/2	25	83	390
2:00	1175 9 1/2	25	81	415
2:30	1175 9-5	23	81	438
3:00	1175 9-5	23	82	461
3:30	1175 9-5	22	82	483
4:00	1175 9-5	22	82	505
4:30	1170 9-5	22	82	527
5:00	1170 9-5	22	82	549
5:30	1175 9-5	23	82	572
6:00	1175 9-5	22	82	594
6:30	1175 9-5	22	82	616
7:00	1175 9-5	23	82	639
7:30	1175 9-5	23	82	662
8:00	1175 9-5	23	80	685
8:30	1175 9-5	23	80	708
9:00	1175 9-5	23	80	731
9:30	1175 9-5	23	82	754
10:00	1175 9-5	22	80	776
10:30	1175 9-5	23	80	799

Current off
" on

Bath No 7

Time	Volts	Amp	Temp	Total
24 15				
24 58				
30 1175	9.5	23	80	822
30 1175	9.5	23	82	845
30 1175	9.5	23	83	868

Out
37 hours

707 - 1st Disc Out June 18 - 5:30
868 Amp 37 hours
about 23 1/2 Amp per hour

End June 16 - 8:30 P.M.

May Bath 2nd Lie in
same Groch

June - 18 -

AM	Lbr	Volts	Imp	Imp	Total
1.00	1175	9 1/2	22	83	
1.00	1175	9 1/2	21 1/2	83	21
2.00	1175	9-5	22	83	43
1.00	1175	9-5	22	83	65
2.00	1175	9-5	22	83	87
3.00	1175	9-5	22	83	109
2.00	1175	9-5	21	84	130
1.00	1175	9-5	21	84	151
1.00	1175	9-5	21	83	172
2.00	1175	9-5	21	83	193
3.00	1175	9-5	21	83	214
2.00	1175	9-5	21	83	235
1.00	1175	9-5	21	83	256
1.00	1175	9-5	21	83	277
2.00	1175	9-5	21	80	298
June	19				
1.00	1175	9.5	21	80	319
2.00	1175	9.5	21	80	340
3.00	1175	9.5	21	80	361
2.00	1175	9.5	21	80	382
1.00	1175	9.5	21	80	403
1.00	1175	9.5	21	80	424
2.00	1175	9.5	21	86	445
1.00	1175	9.5	21	82	466
2.00	1175	9.5	21	83	487

Me 7 Bath 2nd disc m

TIME		Ln	Orth	Comp	Temp	Total
1:00	M	1175	9 1/2	21	83	508
1:30		1175	9 1/2	21	83	529
2:00		1175	9 1/2	20	83	549
2:30		1175	9-5	20	83	569
3:00		1175	9-5	21	83	590
3:30		1175	9-5	21	83	611
4:00		1175	9-5	21	83	632
4:30		1175	9 1/2	22	83	654
5:00		1175	9 1/2	21	83	685
5:30		1175	9 1/2	21	83	706
6:00		1175	9 1/2	20	83	726
6:30		1175	9 1/2	20 1/2	83	746
7:00		1175	9 1/2	21	83	767
7:30		1175	9 1/2	22	83	789
8:00		1175	9 1/2	22	83	811
8:30		1175	9 1/2	22	80	833
9:00		1175	9 1/2	21	80	854
9:30		1175	9 1/2	21	80	864

Out

Comp
41 hours

21 Comp. Per hour

Net 257 - 3 the Lic in
same amt

TIME	Sec	Volts	Amps	Temp	Total
30	1175	9.5	20	83	
30	1175	9.5	21 1/2	83	21
30	1175	9.5	22	83	43
30	1175	9.5	22	83	65
30	1175	9.5	23	83	88
30	1175	9.5	23	83	111
30	1175	9.5	24	83	135
30	1175	9.5	24	83	159
30	1175	9.5	24	83	183
30	1175	9.5	24	83	207
30	1175	9.5	24	83	231
30	1175	9.5	25	83	256
30	1175	9.5	25	83	281
30	1175	9.5	25 1/2	83	306
30	1175	9.5	25	83	331
30	1175	9.5	25	83	356
30	1175	9.5	25	84	381
30	1175	9.5	24 1/2	82	405
30	1175	9.5	24	83	429
30	1175	9.5	24	83	453
30	1175	9.5	25	83	478
30	1175	9.5	25	83	503
30	1175	9.5	24	83	527
30	1175	9.5	24	83	551
30	1175	9.5	24	83	575

Net Bath Amodei Chamber pillow
up with Copper piece

Over

Nr 7 seine Arche

Power off at 5 o'clock
started again at 5:15 PM

Time	Slon	Volto	Comp	Unmp	Metal
30	1175	9 1/2	24	83	599
30	1175	9 1/2	24	83	623
30	1175	9 1/2	23	83	646
30	1175	9 1/2	23	83	669
30	1175	9 1/2	23	83	692
30	1175	9 1/2	23	83	715
30	1175	9 1/2	23	83	738
30	1175	9 1/2	23	83	761
30	1175	9 1/2	24	83	785
30	1175	9 1/2	24	83	809
30	23				
30	1175	9 1/2	24	80	833
30	1175	9 1/2	24	80	857
				857	Comp
				3	
					230

Cont

Beth 707 4th Disc in
same anode

VE	Slv	Collo	Comp	Comp	Total
1175	9.5	20	83		
1175	9.5	20	83	20	
1175	9.5	20	83	40	
1175	9.5	20	83	60	
1175	9.5	20	83	80	
1175	9.5	20	83	100	
1175	9.5	21	83	121	
1175	9.5	21	83	142	
1175	9.5	21	83	163	
1175	9.5	21	83	184	
1175	9.5	21	83	205	
1175	9.5	21	83	226	
1170	9.5	21	83	247	
1170	9.5	21	84	268	
1170	9.5	21	84	289	
1170	9.5	26	84	309	
1170	9.5	20	84	329	
1170	9.5	21	80	350	
1170	9.5	22	80	372	
1170	9.5	23	80	395	
1170	9.5	24	80	419	
1170	9.5	24	80	443	
1170	9.5	24	80	467	
1170	9.5	24	82	491	

Pro 7. ampers increased from
21 amp. to 24 amp. during the night
Reason circulation not running in
in anode chamber.

OK 23

Beth #7 4th Disc in
amplified

JUNE 24

A.M.

	lbs	Volts	amp	Temp	Total
100	1170	9 1/2	22	83	513
100	1170	9 1/2	22	83	535
100	1170	9 1/2	21	83	556
200	1170	9 1/2	20	83	576
100	1170	9 1/2	20	83	596
200	1170	9 1/2	20 1/2	83	616
300	1170	9 1/2	21	83	637
400	1170	9 1/2	20	83	657
500	1170	9 1/2	20	80	677
600	1170	9 1/2	20	80	697
700	1170	9 1/2	20	80	717
800	1170	9 1/2	20	80	737
900	1170	9 1/2	20	83	757
1000	1170	9 1/2	20	83	777
1100	1170	9 1/2	20	83	797
1200	1170	9 1/2	20	83	817
JUNE 25					
100	1170	9 1/2	20	83	837
200	1170	9 1/2	19	81	856
300	1170	9 1/2	19	82	875

Beth #7 Out June 25 - 300 A.M.

875 Amp in 42 hours

about 20 ³³/₄₂ Per hour

In June 23 900 A.M.

Out

2007 Beth 5th Disc in
same month

JUNE 25

Time	Lat	Long	Temp	Wind	Wind	Wind
7:00	1170	9 1/2	18	82		
8:00	1170	9 1/2	18 1/2	82	18 1/2	
9:00	1170	9 1/2	19	82	37	
10:00	1170	9 1/2	19	82	56	
11:00	1170	9 1/2	19	82	75	
12:00	1170	9 1/2	19	80	74	
1:00	1170	9 1/2	18	82	112	
2:00	1170	9 1/2	17	83	129	
3:00	1170	9 1/2	19	83	148	
4:00	1170	9 1/2	19	83	167	
5:00	1170	9 1/2	19	81	186	
6:00	1170	9 1/2	19	81	205	
7:00	1170	9 1/2	19	83	224	
8:00	1170	9 1/2	18 1/2	83	242	
9:00	1170	9 1/2	18 1/2	83	261	
10:00	1170	9 1/2	18 1/2	83	279	
11:00	1170	9 1/2	18 1/2	83	298	
12:00	1170	9 1/2	18	80	315	
1:00	1170	9-5	18 1/2	80	333	
2:00	1170	9-5	18 1/2	80	351	
3:00	1170	9-5	18 1/2	83	369	
4:00	1170	9-5	18 1/2	83	388	
5:00	1170	9-5	18 1/2	80	405	over

No 7 Beth 5th Size in

ONE	Sh	Volts	Amp	Temp	Total
2500	1170	9 1/2	18 1/2	80	424
2600	1170	9.5	18 1/2	83	442
2700	1170	9.5	18 1/2	83	459
2800	1170	9.5	18 1/2	83	474
2900	1170	9.5	18 1/2	83	496
3000	1170	9.5	18	83	514
3100	1170	9.5	18	80	532
3200	June 24				
3300	1170	9.5	18	81	550
3400	1170	9.5	17	80	564
3500	1170	9.5	17	81	584
3600	1170	9.5	17	81	601
3700	1170	9.5	18	81	619
3800	1170	9.5	18	81	634
3900	1170	9.5	19	81	656
4000	1170	9.5	19	81	675
4100	1170	9.5	20	83	695
4200	1170	9.5	20	83	715
4300	1170	9.5	18 1/2	83	733
4400	1170	9.5	18 1/2	83	752
4500	1170	9.5	19	83	771
4600	1170	9.5	19	83	790
4700	1170	9.5	19	83	809
4800	1170	9.5	19	83	828
4900	1170	9.5	19	83	847 Out

No 7 Beth 5th Size Out
 866 Amp in 47 hours
 about 18% Pa loss
 In June 25 - 7.00 P.M.

PM	Sh	Volts	Amp	Temp	Total
7.00	1170	9.5	19	83	866

857 6th line in
same mode

NE	Slw	Velh	Ampl	Comp	Total
20	1175	9.5	18	83	
20	1175	9.5	18	83	18
20	1175	9.5	18	81	36
20	1175	9.5	19	81	55
20	1175	9.5	19	81	74
20	1170	9.5	19	80	93
20	June 25				
20	1170	9.5	18	80	111
20	1170	9.5	18	80	129
20	1170	9.5	18	81	147
20	1170	9.5	18	81	165
20	1170	9.5	18	81	183
20	1170	9.5	18	81	201
20	1170	9.5	18	82	219
20	1170	9.5	17	82	236
20	1170	9.5	18	81	254
20	1170	9.5	18	81	272
20	1170	9.5	18	81	290
20	1170	9.5	17	83	307
20	1175	9.5	17	80	324
20	1175	9.5	17.5	83	341
20	1175	9.5	17.5	81	358
20	1150	9.5	17.5	82	375
20	1165	9.5	19	78	394
20	1165	9.5	19	80	413

#7 Bath

#6 $\frac{3}{4}$ disc

disc, scraps and/or

June 28, 29

Size	Wt	Volts	Temp.	Rate
7M	1165	9-5	18-5	80
8M	1165	9-5	18	80
9M	1165	9-5	17.5	80
10M	1165	9-5	17.5	80
11M	1165	9-5	17 1/2	80
12M	1165	9-5	17 1/2	80
13M	1165	9-5	18	81
14M	1165	9-5	18	81
15M	1165	9-5	18	82
16M	1165	9-5	18	82
17M	1165	9-5	18	81
18M	1165	9-5	18	81
19M	1165	9-5	17 1/2	82
20M	1165	9-5	18	87
21M	1165	9-5	18	86
22M	1165	10	19	90
23M	1165	10	19	90
24M	1165	10	18.5	90
25M	1165	10	18	90
26M	1165	10	17.5	88
27M	1165	10	18	87
28M	1165	10	18	85

 Raised $\frac{1}{2}$ V. at
10.45 PM.

$$48) 863 \frac{2}{3} (17.9$$

$$\begin{array}{r} 48 \\ 863 \\ \underline{336} \\ 470 \\ \underline{432} \end{array}$$

Start June 27, 20 - 7 P.M.
 Finish " 29, 20 - 7 P.M.
 Total Amps 863
 " howls 48
 Average Amp. 17.9
 #7 Both
 6th disc. disc. scrap mode

#7 Both

#6 disc

disc. scrap mode

June 29-20		Vols Amp.		Temp	Total	
#7	Disc	1165	10 18	85	863	Out

same month

	Sh	Vols	Imp	Imp	Net
100	1165	10	17	85	
100	1165	10	16	83	16
100	June 30				
100	1165	10	15 1/2	82	31
100	1165	10	15 1/2	82	47
100	1165	10	15 1/2	82	62
100	1165	10	15 1/2	81	78
100	1165	10	15 1/2	81	93
100	1165	10	15 1/2	81	109
100	1165	10	15 1/2	81	124
100	1165	10	15 1/2	80	140
100	1165	10	16	81	156
100	1165	10	17	82	173
100	1165	10	16	83	189
100	1165	10	16 1/2	80	205
100	1165	10	16	85	221
100	1165	10	16	82	237
100	1165	10	16	81	253
100	1165	10	16	80	269
100	1165	10	17	80	286
100	1165	10	16 1/2	80	303
100	1165	10	16 1/2	80	319
100	1165	10	16	80	335
100	1165	10	16	81	351
100	1165	10	16	80	367

4th Bath 7th Size

Pile	Sp.	Orth	Imp	Imp	Met
100	1165	10	16	80	383
90	1165	10	16	80	399
80	July 1 ²⁰				
70	1165	10	15	80	414
60	1165	10	15	80	429
50	1165	10	15	82	444
40	1165	10	16 ^{1/2}	83	460
30	1165	10	16 ^{1/2}	83	477
20	1165	10	16 ^{1/2}	83	493
10	1165	10	16 ^{1/2}	85	510
0	1165	10	16 ^{1/2}	85	526
	1165	10	16.5	85	542
	1165	10	16.	85	559
	1165	10	16.5	83	575
	1165	10	16.5	83	592
	1165	10	16.5	85	608
	1165	10	16.5	85	625
	1165	10	16.5	85	641
	1165	10	16.5	85	658
	1165	10	16.5	84	675
	1165	10	16	84	690
	1165	10	16	82	706
	1165	10	16	82	722
	1165	10	16	82	738
	1165	10	16	82	754

Bath No. 7

4th Disc

Sp	Sgs	Volts	Amps	Temp	Total
00	1165	10	16	82	770
00	1165	10	16	82	786
00	1165	10	16	81	802
00	1165	10	16	81	818
00	1165	10	16	81	834
00	1165	16	16	81	850
00	1165	10	16	81	866

Out

Reg. Strap feed inside
Maple wood drilled
partition

Changed the Maple-
wood drilled partition
to a pure linen piece
July -15, 20

The wood person walked

S-4 Book

No 7 1st Disc in word Partition
Beth

Sh.	Volts	Imp	Imp	Intal
1165	9-5	14	80	
1165	9-5	14	88	14
1165	9-5	14	80	28
1165	9-5	14	80	42
1165	9-5	15	83	57
1165	9-5	14 1/2	83	71
1165	9-5	14 1/2	83	86
1165	9-5	14 1/2	83	100
1165	9-5	14 1/2	83	115
1165	9-5	14 1/2	84	129
1165	9-5	15	84	144
1165	9-5	15	84	159
1165	9-5	15	82	174
1165	9-5	14 1/2	82	189
1165	9-5	15	82	204
1165	9-5	15	84	219
1165	9-5	15	83	234
1165	9-5	15	83	249
1165	9-5	14-5	83	263
1165	9-5	15	82	278
1165	9-5	15	82	293
1165	9-5	15	81	308
1165	9-5	14-5	81	322
1165	9-5	15	81	337

not a number

MS 7 Bath 1st Lisc

Qty	Item	Volts	Comp	Comp	Total	
100	1165	9-5	14-5	81	951	not a not on
100	1165	9-5	14-5	81	366	
100	July 5					
100	1165	9-5	14-5	81	880	
100	1165	9-5	15	81	395	
100	1165	9-5	14	81	409	
100	1165	9-5	14	81	423	
100	1165	9-5	14	81	437	
100	1165	9-5	14	81	451	
100	1165	9-5	14	81	465	
100	1165	9-5	14	81	479	
100	1165	9-5	14	81	493	not a not on
100	1165	9-5	14	81	507	
100	1165	9-5	14	81	519	
100	1165	9-5	14 1/2	81	533	
100	1165	9-5	14 1/2	81	548	
100	1165	9-5	14 1/2	81	562	
100	1165	9-5	14 1/2	81	576	
100	1165	9-5	15	81	591	
100	1165	9-5	15	81	606	
100	1165	9-5	14	81	620	
100	1165	9-5	13 1/2	81	633	Not a not on
100	1165	9-5	13 1/2	81	647	
100	1165	9-5	13 1/2	81	660	
100	1165	9-5	13 1/2	81	674	

Cleaned up. 043

Outside battery = .054

Inside " = .058

53 / $\frac{755}{53} \times 8$ / 14.2
 $\frac{53}{53} \times 8$
 $\frac{53}{53} \times 8$
 $\frac{53}{53} \times 8$

Run total to 750 Amps.

#7 Bath 1st disc,
 after cleaning tank free from
 grease + oil.

Start July 3, 20. 11 AM.

Finish " 5.20. 4 AM.

Total Amp. 755

" hours 5.3

Average Amp. 14.2

No 7 Bath 1st Disc

Volts	Amps	Temp	Total
116.5	9-5	13%	81
116.5	9-5	13%	81
July 6			
116.5	9-5	13%	81
116.5	9-5	13%	81
116.5	9-5	13%	81
116.5	9-5	13%	81
53 hrs.			

Out

Mounted in No 7 edge: was
rounded off

Disc, revolved $1\frac{1}{2}$ R.P.M.

Added 5° general bath slope to
plating solution 11:30 AM July 7.

Bath No 7.

9 Line
3rd disc in

July 6

Time	Spec	Volts	amp	Temp	Time
7:00	1165	9-5	13	83	
7:00	1165	9-5	13	83	13
7:00	1165	9-5	13	84	26
7:00	1165	9-5	13	84	39
7:00	1165	9-5	13-5	84	52
7:00	1165	9-5	13-5	84	66
10:40	1165	9-5	13-5	84	79
11:00	1165	9-5	13-5	84	93
12:00	1165	9-5	14	84	107
1:00	July 7				
1:00	1165	9-5	14	84	121
1:00	1165	9-5	14	84	135
3:00	1165	9-5	14	84	149
4:00	1165	9-5	14	84	163
5:00	1165	9-5	14	84	177
6:00	1165	9-5	14	84	191
7:00	1165	9-5	14	84	205
7:00	1165	9-5	14	84	219
9:40 AM	1165	9-5	14.5	85	233
10:00	1165	9-5	14.5	85	248
11:00	1165	9-5	13.5	83	261
12:00	1165	9-5	13.5	83	275
1 PM	1165	9-5	13.5	82	288
2:00	1165	9-5	13.5	83	302
3:00	1165	9-5	13	83	315

$$\begin{array}{r}
 41 \overline{) 557} \quad 13.6 \\
 \underline{41} \\
 147 \\
 \underline{123} \\
 240
 \end{array}$$

#7 Bath

2nd disc in.

Sp. 200	Volts	Temp	Temp	Temp
1165	9.5	13.5	84	328
1165	9.5	13.5	85	342
1165	9.5	13.5	85	355
1165	9.5	13.5	84	369
1165	9.5	13.5	84	382
1165	9.5	13.5	83	396
1165	9.5	13	83	409
1165	9.5	13.5	82	422
1165	9.5	13.5	82	436
July 8, 20.				
1165	9.5	13.5	82	449
1165	9.5	13.5	82	463
1165	9.5	13.5	82	476
1165	9.5	13.5	82	490
1165	9.5	13.5	82	503
1165	9.5	13.5	82	517
1165	9.5	13.5	82	530
1165	9.5	13.5	82	544
1165	9.5	13.5	80	557

Cont.

2 in plated disc. from # 2 in bath

Mach. wash, then dist. water rinse &
put in mach. drier. Revolve for
12 minutes before copper plate.
Run to 600 Amps hours
No skimmer in plate bath.
after 12 min without current no
sparks was floating in bath.
Knots taken off with shears.
was machine dried before
knots were taken off.
did not show oxidized.

7 Bath

July 8, 20.

Sp. Bath Amp

1165 9.5 13

1165 9.5 13

1165 9.5 13

1165 9.5 13

1165 9.5 13

1165 9.5 13

1165 9.5 13

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1165 9.5 13

1165 9.5 13

1165 9.5 13

1165 9.5 13

1165 9.5 13

Temp Total

80 13

80 26

80 39

80 52

80 65

80 78

80 91

80 104

80 117

80 130

80 143

80 156

80 168

80 181

80 194

80 207

80 220

80 233

80 246

80 258

80 271

80 283

80 296

80 309

80 322

80 335

80 348

80 361

80 374

80 387

80 400

80 413

80 426

80 439

3rd disc
2 in plated disc
from # 2 in bath

Added inside temp

Added 10^{cc} gen. bath slope to
ropper plate. sol. at 11 A.M. July 9

47/62.7/13.3
 $\frac{47}{157}$
 $\frac{141}{160}$

Start July 8, 20 - 11 #4
 Finish " 16, 20 - 11 A.M.
 Total time 6 27
 " home 47
 Average tempo 13.3

#7 Bath

3rd disc
 #2 isolated disc
 from #2 in bath.

Sp. No.	Vib.	Ampl.	Temp.	Total
1170	9.5	13.5	80	309
1165	9.5	13.5	80	323
1165	9.5	13.5	82	336
1165	9.5	14	81	330
1165	9.5	14	81	364
1165	9.5	14	80	378
1165	9.5	14	80	392
1165	9.5	14	80	406
1165	9.5	14	80	420
1165	9.5	14	80	434
1165	9.5	14	80	448
1165	9.5	14	80	462
1165	9.5	14	80	476
July 10, 20.				
1165	9.5	14	80	490
1165	9.5	14	80	504
1165	9.5	14	80	518
1165	9.5	14	80	532
1165	9.5	13.5	80	545
1165	9.5	13.5	80	559
1165	9.5	13.5	80	572
1165	9.5	13.5	80	586
1165	9.5	13.5	80	600
1165	9.5	13.5	80	614
1165	9.5	13.5	80	627

Ant 47 hrs

No 2 Nickel mould washed
well and rinsed with distilled
water put in wet
put in No 7 Bath for 10 minutes
with current off

The Ni in No 7 Bath had edge
piled off 1" long perfectly
edge too sharp

Put current on with screw head up
Want to see how it beads when
taken out.

9:00 AM. Put in more scrap
Bars

No 7 Bath

	Volts	Amp	Temp	Temp
0	1165 9-5	12	80	
10	1165 9-5	13	80	13
20	1165 9-5	13	80	24
30	1165 9-5	12-5	80	38
30	1165 9-5	13	80	51
40	1165 9-5	13	80	64
50	1165 9-5	12	80	76
60	1165 9-5	12	80	88
70	1165 9-5	12	80	100
80	1165 9-5	12	80	112
90	1165 9-5	12	80	124
100	1165 9-5	13	80	136
110	1165 9-5	12	80	148
120	1165 9-5	14	80	162
130	1165 9-5	14	80	176
140	1165 9-5	13	80	188
150	1165 9-5	13	80	202
160	1165 9-5	13	80	215
170	1165 5-5	13	81	228
180	1165 4-5	13-5	80	241
190	1165 4-5	13-5	80	255
200	1165 9-5	13-5	80	268
210	1165 9-5	18-5	81	281
220	1165 9-5	18-5	81	295

925 7. Both n face

JULY

Time	Sh	Orth	Amph	Amph	Total
8:00	1165	9-5	13-5	81	368
9:00	1165	9-5	13-5	81	322
10:00	1165	9-5	13-5	81	335
11:00	1165	9-5	13-5	81	349
12:00	1165	9-5	13-5	81	362
1:00	July 12				
2:00	1165	9-5	13	81	375
3:00	1165	9-5	13	81	388
4:00	1165	9-5	13	81	401
5:00	1165	9-5	13	81	414
6:00	1165	9-5	13	81	427
7:00	1165	9-5	13	81	440
8:00	1165	9-5	13	81	453
9:00	1165	9-5	13	81	467
10:00	1165	9-5	13.5	83	480
11:00	1165	9-5	13.5	82	494
12:00	1165	9-5	13.5	82	507
1:00	1165	9-5	13.5	80	521
2:00	1165	9-5	13.5	80	534
3:00	1170	9-5	13	80	548
4:00	1165	9-5	13	80	561
5:00	1165	9-5	14	80	574
6:00	1165	9-5	14	80	588
7:00	1165	9-5	14	80	602
8:00	1165	9-5	14	80	616

don't take out
yet. Want to
see how it
heads when
taken out

61/802.0 | 13.1
 61
 192
 183
 90

Start July 10, at 8:20 PM.
 Finish " 13 " 9 AM
 Total Amps 802
 Average " 13.1

#7 Bath

Ln	Volts	Amps	Watt
1165	9.5	14	80
1165	9.5	13.5	81
1165	9.5	13.5	83
1165	9.5	13.5	83
1165	9.5	13.5	83
July 13, 20			
1165	9.5	13.5	81
1165	9.5	13.5	81
1165	9.5	13	81
1165	9.5	13	81
1165	9.5	13	81
1165	9.5	13	82
1165	9.5	13	82
1165	9.5	13	82

Alt

Rev. 2 minutes in H₂O bath, then
full current, put in dry.

in 191 Amp hours
Washed - rinsed distilled water
dried on whirler.

Put in with full current on
dry. Carbon disc.

Mr Edison wants to examine
the wood filter when this
disc is taken out.

#7 Bath					
Time	Sp. Gr.	Volts	Amps	Temp	Total
Started July 13 2.0					at 10 ³⁰ AM
0.15	1165	9.5	14	82	
1.30	1165	9.5	13.5	83	13.5
1.50	1165	9.5	14.5	83	28
2.20	1165	9.5	14	83	42
3.30	1165	9.5	14	85	56
4.30	1165	9.5	13.5	84	69
5.30	1165	9.5	13.5	85	83
6.30	1165	9.5	13.5	80	96
7.30	1165	9.5	13.5	80	110
8.30	1165	9.5	13.5	85	123
9.30	1165	9.5	15	84	137
10.30	1165	9.5	14.5	83	152
11.30	1165	9.5	14.5	83	166
12.30	1165	9.5	14.5	83	181
1.40	July 14				
1.30	1165	9.5	13	83	208
2.30	1165	9.5	13	83	221
3.30	1165	9.5	13	83	234
4.30	1165	9.5	13	83	247
5.30	1165	9.5	13	83	260
6.30	1165	9.5	13	84	273
7.30	1165	9.5	13	84	286
8.30	1165	9.5	13.5	83	299
9.30	1175	9.5	14	80	313

$$\begin{array}{r} 46 \overline{) 618} \\ \underline{158} \\ 200 \\ \underline{184} \end{array} \quad 13.4$$

Total Amps = 618
 11 hour = 46
 Average Amps = 13.4

7 Bath					
Time	Volts	Amps	Temp	Total	
10:20	116.5	9.5	14.5	80	328
11:30	116.5	9.5	14.5	80	343
12:30	116.5	9.5	13	80	356
1:30	116.5	9.5	13	80	369
2:30	116.5	9.5	13	85	382
3:30	116.5	9.5	13	87	395
4:30	116.5	9.5	13	85	408
5:30	116.5	9.5	13	85	421
6:30	116.5	9.5	13	85	434
7:30	116.5	9.5	13.5	85	447
8:30	116.5	9.5	13.5	85	461
9:30	116.5	9.5	13.5	83	474
10:30	116.5	9.5	13.5	83	488
11:30	116.5	9.5	13.5	83	501
12:30	116.5	9.5	13	83	514
1:30	116.5	9.5	13	83	527
2:30	116.5	9.5	13	83	540
3:30	116.5	9.5	13	81	553
4:30	116.5	9.5	13	81	566
5:30	116.5	9.5	13	81	579
6:30	116.5	9.5	13	81	592
7:30	116.5	9.5	13	81	605
8:30	116.5	9.5	13	81	618

Ant

#1 Nickel taken out 10 P.M.

July 15 at 70 Amp

① Treatment in Nickel bath

Put in dry. Turned one minute with no current.

Then full current put on.

② Treatment in Copper

Put in dry with full current on.

Cleaned out Copper bath and changed maple wood screen, drilled partitions to a linen one

Start July 15, 20 #7 Copper

	Sp. Wt.	Vol. Bath	Amp	Time	Total
1	1165	9.5	18.5	92	19
2	1165	9.5	19	92	19
3	1165	9.5	14	90	25
4	1165	9.5	17	90	25
5	1165	9.5	18	90	25
6	1165	9.5	17.5	90	25
7	1165	9.5	17.5	90	25
8	1165	9.5	17.5	90	25
9	1165	9.5	17.5	90	25
10	1165	9.5	17.5	90	25
11	1165	9.5	17.5	90	25
12	1165	9.5	17.5	90	25
13	1165	9.5	17.5	90	25
14	1165	9.5	17.5	90	25
15	1165	9.5	17.5	90	25
16	1165	9.5	17.5	90	25
17	1165	9.5	17.5	90	25
18	1165	9.5	17.5	90	25
19	1165	9.5	17.5	90	25
20	1165	9.5	17.5	90	25
21	1165	9.5	17.5	90	25
22	1165	9.5	17.5	90	25
23	1165	9.5	17.5	90	25
24	1165	9.5	17.5	90	25
25	1165	9.5	17.5	90	25
26	1165	9.5	17.5	90	25
27	1165	9.5	17.5	90	25
28	1165	9.5	17.5	90	25
29	1165	9.5	17.5	90	25
30	1165	9.5	17.5	90	25
31	1165	9.5	17.5	90	25
32	1165	9.5	17.5	90	25
33	1165	9.5	17.5	90	25
34	1165	9.5	17.5	90	25
35	1165	9.5	17.5	90	25
36	1165	9.5	17.5	90	25
37	1165	9.5	17.5	90	25
38	1165	9.5	17.5	90	25
39	1165	9.5	17.5	90	25
40	1165	9.5	17.5	90	25

Transferred from
#1 Ni Bath
July 15, 20
Total Amps =
70 Ni Plated

$$\begin{array}{r}
 36 \overline{) 641} \quad | 17.8 \\
 \underline{252} \\
 291 \\
 \underline{258}
 \end{array}$$

Total Amps 641
 " hours 36
 Average Amps 17.8

#7 Bath					
Time	Temp	Volts	Amps	Temp	Total
10:50	116.5	9.5	18	88	427
11:00	116.5	9.5	18	89	445
11:10	116.5	9.5	17.5	89	463
11:20	116.5	9.5	17.5	20	1
11:30	116.5	9.5	17.5	90	481
11:40	116.5	9.5	18	91	499
11:50	116.5	9.5	18	90	517
12:00	116.5	9.5	18	90	535
12:10	116.5	9.5	18	90	553
12:20	116.5	9.5	18	90	571
12:30	116.5	9.5	17.5	90	588
12:40	116.5	9.5	17.5	93	606
12:50	116.5	9.5	18	93	624
1:00	116.5	9.5	17.5	93	641

Cent

Put in. 1st per. bath day
full current on.

#7 Bath

Started July 17, 20 @ 11:30 AM.

Time	Sp. Dr.	Volta	Amper.	Temp.	Total
11:30 AM	1165	9.5	17	90	
12:30 PM	1165	9.5	17	90	17
1:30 PM	1170	9.5	17	90	34
2:30 PM	1170	9.5	17	85	51
3:30 PM	1170	9.5	17	95	68
4:30 PM	1170	9.5	17	95	85
5:30 PM	1170	9.5	17.5	93	102
6:30 PM	1170	9.5	17	90	119
7:30 PM	1170	9.5	17	90	136
8:30 PM	1170	9.5	17	90	153
9:30 PM	1170	9.5	17	90	170
10:30 PM	1170	9.5	18	89	188
11:30 PM	1170	9.5	18	92	206
12:30 AM	1170	9.5	18	92	224
1:00 AM	1170	9.5	19	92	243
2:00 AM	1170	9.5	20	92	263
3:00 AM	1170	9.5	20	92	283
4:00 AM	1170	9.5	19	92	302
5:00 AM	1170	9.5	19	92	321
6:00 AM	1170	9.5	19	90	340
7:00 AM	1170	9.5	19	90	359
8:00 AM	1170	9.5	19	90	378
9:00 AM	1170	9.5	19	90	397
10:00 AM	1170	9.5	19	90	416

Transfer from
#2 Vi Bath
July 17, 20.
133 Amp. in.
spital

41) 753 \div 18.3
 $\frac{41}{343}$
 $\frac{110}{233}$
 $\frac{150}{83}$
 Total miles = 753
 "hours" = 41
 Average amp/h = 18.3

#7 Bath

July 18-28

AM	PM	Volts	Amps	Temp	Notes
1100	1170	9-5	19	98	435
1200	1170	9-5	19	98	454
1300	1170	9-5	19	92	473
1400	1170	9-5	19	92	492
1500	1170	9-5	19	92	511
1600	1170	9-5	19	92	530
1700	1170	9-5	19	94	550
1800	1170	9-5	19	94	569
1900	1170	9-5	19	94	589
2000	1170	9-5	19	94	608
2100	1170	9-5	19	98	627
2200	1170	9-5	19	98	646
2300	1170	9-5	19	98	664
2400	1170	9-5	19	98	683
2500	1170	9-5	19	98	702
2600	1170	9-5	19	98	721
2700	1170	9-5	19	98	740
2800	1170	9-5	19	98	759

spec of bath in date
 1000 of 1000 1000
 1000 of 1000 1000
 1000 of 1000 1000

Out

#7 Bath

Rubber
Mammal #10

TIME	Sp. g/s	Imp	Roll	amp	Stat
11 AM	1170	80	7.5	18	
12	"	"	"	16	16
1 PM	Aug 1, 1170	20, 80	9.5	16	32
2	"	"	"	15	47
3	"	"	"	15	62
4	"	"	"	15	77
5	"	"	"	15	92
6	"	"	"	14	106
7	"	"	"	14	120
8	"	"	"	14	134
9	"	"	"	14	148
10	"	"	"	15	163
11 AM	"	"	"	15	178
12	"	"	"	15	193
1 PM	"	"	"	15	208
2	"	"	"	15	223
3	"	"	"	15	238
4	"	"	"	15	253
5	"	"	"	15	268
6	"	"	"	15	283
7	"	"	"	15	298
8	"	"	"	16	314
9	"	"	"	"	"
10	"	"	"	"	"
11	"	"	"	"	"
12	"	"	"	"	"
1 PM	Aug 2, 1170	20, 80	9.5	16	330

#7 Bath

Rubbish

#10

Time	Temp	Temp	Value	Temp	Temp
2:11	1170	80	9.5	14	346
3	"	"	"	16	360
4	"	"	"	16	376
5	"	"	"	16	392
6	"	"	"	16	408
7	"	"	"	16	424
8	"	"	"	16	440
9	"	"	"	16	456
10	"	"	"	16	472
11	"	"	"	15.5	487
12	"	"	"	15	512
1 PM	"	"	"	15	517
2	"	"	"	15.5	533
3	"	"	"	16	549
4	"	"	"	16	565
5	"	"	"	15.5	580
6	1175	"	"	15.5	596
7	"	"	"	15.5	711
8	"	"	"	15.5	727
9	"	"	"	"	"
10	"	"	"	"	"
11	"	"	"	"	"
12	"	"	"	"	"
1 PM	"	"	"	"	"

#1727

cent



Calypso.

#2 Bath

Rubbermaid
#16

Start Aug. 3, at 10 A.M.

TIME	Sp. Gr.	Temp.	Volta	Amp.	Total
10 AM	1170	80	9.5	14.5	14
11 "	"	"	"	14.5	29
12 "	"	"	"	14.5	43
1 PM	"	"	"	14.5	57
2 "	"	"	"	14.5	72
3 "	"	"	"	14.5	86
4 "	"	"	"	14.5	102
5 "	"	84	8.5	15.5	117
6 "	"	"	"	15.5	132
7 "	"	"	"	15	146
8 "	"	"	10	14.5	161
9 "	"	"	"	14.5	176
10 "	"	"	"	14.5	190
11 "	"	"	"	14.5	205
12 "	"	80	9.5	14.5	220
1 PM	"	"	"	14.5	232
2 "	"	"	"	14	247
3 "	"	"	"	14	261
4 "	"	71	"	14	276
5 "	"	"	"	14.5	290
6 "	"	"	"	14.5	305
7 "	"	"	"	14.5	319
8 "	"	"	"	14.5	333
9 "	1170	80	9	14	347
10 "	"	"	"	14	361

5th time
in knots
left on.

Aug. 4

General Bath
added.

August 4, 20 —
added 10 cc General Bath

Aug. 5, 20. —
added 20 cc General Bath

aug. 10. #2 Bath

TIME	Spr	Temp	Volts	Temp	Total
11	1170	80	9.	14	361
12	"	"	"	14	375
13	"	"	"	14	389
2	"	"	9.5	14.5	403
3	"	"	"	14.5	418
4	"	"	"	14	432
5	"	"	9.5	14	446
6	"	"	"	14	460
7	"	"	"	14	474
8	"	"	4	14	488
9	"	"	"	14	502
10	"	"	"	14	516
11	"	"	"	14	530
12	"	"	"	14	544
1/4	"	"	"	14	558
2	"	"	"	14	572
3	"	"	83	14	586
4	"	"	"	14	600
5	"	"	"	14	614
6	"	"	"	14	628
7	"	"	"	14	642
8	"	"	"	14	656
9	"	"	9	14	670
10	"	"	"	14	684
11	"	"	"	14	698
12	"	"	"	14	710

Rubber animals
#16

5th time in
kicks left on

Aug 5, 20

50) 260 (4
210

ant

8 Batter Rubberdamish

Start Aug 3, 20. at 5 PM. # 20

TIME Sp. in Comp. Vlt. Amp. Total

5 PM	11/16	84	8.5	16	
6	"	"	"	16.5	16
7	"	"	"	16.5	33
8	"	"	10	15.5	48
9	"	"	"	15.5	64
10	"	"	"	15.5	79
11	"	"	"	15.5	95
12	"	80	9.5	15.5	110
1 PM	"	"	"	15.5	126
2	"	"	"	15.5	141
3	"	"	"	15.5	157
4	"	"	"	15.5	172
5	"	"	"	15	187
6	"	"	"	15	202
7	"	"	"	15	217
8	"	"	"	15	232
9	1170	80	9.	15	247
10	"	"	"	15	262
11	"	"	"	15	277
12	"	"	"	15	292
1 PM	"	"	"	15	307
2	"	"	9.5	14.5	321
3	"	"	"	14.5	336
4	"	"	"	15	351
5	"	"	"	15.5	366

2nd time in
lanterns not taken
off.

Aug. 4, 20

8 Bath

Rubberdam

#20

TIME	Spgr	Temp	Volts	amps	Total
6	1170	80	9.5	15	341
7	"	"	"	15	390
8	"	"	"	15	411
9	"	"	"	15	426
10	"	"	"	15	441
11	"	"	"	15	456
12	"	"	"	15	471
13	"	"	"	15	486
14	"	"	"	15	501
1	"	"	8.8	15	516
2	"	"	"	15	531
3	"	"	"	15	546
4	"	"	"	15	561
5	"	"	"	15	576
6	"	"	"	15	590
7	"	"	8.0	15	605
8	"	"	"	15	620
9	"	"	"	15	635
10	"	"	"	15	650
11	"	"	"	15	665
12	"	"	"	15	680
1	"	"	"	15	695
2	"	"	"	15	710
3	"	"	"	15	725
4	"	"	"	15	740
5	"	"	"	15	755
6	"	"	"	15	770
7	"	"	"	15	785

~~Aug 15~~
Aug 15, 530.

49/100

Out

25 11/1
22 #2

Added general bath doses

Aug 4 = 10 cc to Copper bath
 " 5 = 20 cc " " "
 " 6 = 40 cc " " "
 " 7 = 40 cc " " "
 " 8 = 40 cc " " "
 " 9 = 40 cc " " "
 " 10 = 40 cc " " "
 " 11 = 40 cc " " "
 " 12 = 40 cc " " "

Mr Edison's Permission to stop adding
 general bath doses till further order
 because center of disc is burnt at point
 of copper plates

4 Bath August 8
 Aug 8 20 11 AM

TIME	Temp	Volts	Amp	Total	#1 meter
12 AM	1175	85	9	175	pgm in wry
12	1175	85	9	17	full run
1 PM	"	"	"	17	rest on
2	"	"	"	17	after 70
3	"	"	"	17	about 100
4	"	"	"	16	in the bath
5	"	"	"	15	to be given
6	"	"	"	15	750 hrs
7	"	"	"	15	in Cop. p.
8	"	"	"	15	and <u>distilled</u>
9	1190	80	9	155	that will
10	"	"	"	155	make 290
11	"	"	"	155	stripper
12	"	"	"	155	for the
1 PM	"	"	"	16	mold
2	"	"	"	16	
3	"	"	"	16	
4	"	"	"	16	
5	"	"	"	16	
6	"	"	"	16	
7	"	"	"	16	
8	"	"	"	16	
9	"	"	"	16	
10	"	"	"	16	
11	"	"	"	16	

#4 Bath Continued

Time	Spd	Temp	Voltage	Amperes	Total
12	1170	80	9	16	397
1 PM	"	"	"	16	483
2	"	"	"	16	419
3	"	"	"	16	435
4	"	"	"	16	451
5	"	"	"	16	467
6	"	"	"	16	483
7	"	"	"	16	499
8	"	"	"	16	505
9	"	"	"	16.5	521
10	"	"	"	16.5	538
11	"	"	"	16.5	554
12	"	"	"	16.5	571
1 PM	"	82	"	16.5	587
2	"	"	"	15.5	603
3	"	"	"	15.5	618
4	"	"	"	15.5	634
5	"	"	"	15.5	649
6	"	85	"	15.5	665
7	"	"	"	5.5	553
8	"	"	"	15.5	696
9	1170	82	"	16.5	712
10	"	"	"	16.5	725
11	"	"	"	16.5	739
12	"	"	"	16.5	754

Eggs 25 #4-B
Chickens

Aug. 10, 20

Cont

LaBath Aug 8th

Aug 8 th	11 AM	Temp	Volts	Amps	Time	Remarks
11 AM	11.5	80	9	14	14	294-2
12	"	"	"	13.5	27	# 2 No. 12
1 PM	"	"	"	13.5	41	removed
2	"	"	"	13	54	Aug 8 th
3	"	"	"	13	67	10 PM
4	"	"	"	13	80	got in with
5	"	"	"	13	93	full current
6	"	"	"	13	106	on after
7	"	"	"	13	119	77 amp
8	"	"	"	13.5	133	no in
9	"	"	"	13.5	148	no bath
10	"	"	"	13.5	162	after 28
11	"	"	"	13.5	175	stop pump
12	"	"	"	13.5	188	Just with
1 PM	"	"	"	14	202	made 2
2	"	"	"	14	216	stop pump
3	"	"	"	13.5	230	to the
4	"	"	"	14	244	backed up
5	"	"	"	14	257	as 77
6	"	"	"	14	272	7 hour
7	"	"	"	14	286	leather
8	"	"	"	N	300	
9	"	"	"	"	314	
10	"	"	"	"	328	
11	"	"	"	"		

2 Cu Bath Eggs 29-33

Time	Sp	Temp	Volts	Amps	Total
12	1170	80	9	14	342
1 PM	"	"	"	14	354
2	"	"	"	14	368
3	"	"	"	14	382
4	"	"	"	14	396
5	"	"	"	14	410
6	"	"	"	14	424
7	"	"	"	14	438
8	"	"	"	14	452
9	"	"	"	14	466
10	"	"	"	14	480
11	"	"	"	14	494
12	"	"	"	14	508
1 AM	"	82	"	14	522
2	"	"	"	14	536
3	"	"	"	14	550
4	"	"	"	14	564
5	"	"	"	14	578
6	"	85	"	14	592
7	"	"	"	14	606
8	"	"	"	14	620
9	1170	82	"	14	634
10	"	"	"	14	648
11	"	"	"	14	662
12 AM	"	"	"	14	676
1	"	"	"	14	690
2	"	"	"	14	704
3	"	"	"	14	718
4	"	"	"	14	732

Aug 10, 20.

Out

4 Bath Cu

Start Aug. 11 20 @ 10 #M.

Eyp # 35 AB

Time	Sp. Am	Temp	Volt	Amp	Total	Transfer from
10 AM	115	82	8.5	145		# 2 hi Bath
11	"	"	"	145	14	103 am for,
12	1170	80	"	145	24	This piece not
1 PM	"	"	"	145	43	polished.
2	"	"	8.5	145	58	
3	"	"	"	14	72	
4	"	"	"	14	86	
5	"	"	"	14	100	
6	"	"	"	14	114	
7	"	"	"	14	128	
8	"	"	"	14	142	
9	"	"	"	14	156	
10	"	"	"	14	170	
11	"	"	"	14	184	
12	"	"	"	14	198	
(AM)	"	"	"	14	212	
1	"	"	"	14	226	
2	"	"	"	14	240	
3	"	"	"	14	254	
4	"	"	"	14	268	
5	"	"	9	14	282	
6	"	"	"	14	296	
7	"	"	"	14	310	
8	"	17	8.5	14	324	
9	"	"	"	14	338	
10	"	"	"	14		

Aug. 12, 20.

#2 Bath Cu Ep 364B

TIME	Sp. A.	Temp.	Volt	Amp	Total
2	1170	8.5	13	369	
3	"	"	13	395	
4	"	"	13	421	
5	"	"	13.5	450	
6	"	"	13.5	477	
7	"	"	13.5	504	
8	"	"	13.5	518	
9	"	"	13.5	548	
10	"	"	13.5	578	
11	"	"	13.5	608	
12	"	"	13.5	636	
1	"	"	13.5	664	
2	"	"	13.5	691	
3	"	"	13.5	718	
4	"	"	13.5	745	
5	"	"	13.5	758	
6	"	"	13.5	758	

Aug 13.7

Out

#5 Cu Bath

Standard Aug 11, 20 @ 8 PM

TIME	Sp. A.	Temp.	Volt	Amp	Total
8 P.M.	1170	8.5	12	12	
9	"	"	12	12	
10	"	"	12	24	
11	"	"	12	36	
12	"	"	12	48	
1 PM	"	"	12	60	
2	"	"	12	72	
3	"	"	12	84	
4	"	"	12	96	
5	"	"	12	108	
6	"	"	11.5	119	
7	"	"	11.5	131	
8	"	"	11.5	142	
9	"	"	11.5	154	
10	"	"	12	166	
11	"	"	12	178	
12	"	"	12	190	
1 PM	"	"	12	202	
2	"	"	12	214	
3	"	"	12	226	
4	"	"	12	238	
5	"	"	12	250	
6	"	"	12	262	
7	"	"	9	274	
8	"	"	12	286	

Ep 374B

Castanode &
Mable screen
Transfer front
1 m Bath
Polished disc

Aug 12, 20.

#5 Bath Cu Exp 37A-B

TIME	Sp	Dr	Temp	Volts	amp	Total
9:20	"	"	1170 80	9	12	308
12	"	"	"	"	12	332
12	"	"	"	"	12	358
Aug 13, 1 AM	"	"	170 80	9.5	12	382
2	"	"	"	"	13	408
3	"	"	"	"	13	434
4	"	"	"	"	9	465
5	"	"	"	"	13	484
6	"	"	"	"	12	508
7	"	"	"	"	12	532
8	"	"	"	"	12	556
9	"	"	"	"	12	580
10	"	"	"	"	12	604
11	"	"	"	"	12	628
12	"	"	"	"	12	652
1 PM	"	"	"	"	12	676
2	"	"	"	"	12	700
3	"	"	"	"	12	724
4	"	"	"	"	12	748

Out

#6 Cu Bath

Start Aug 11, 2001 8 P.M.

TIME	Sp	Dr	Temp	Volts	amp	Total
8 PM	"	"	80	8.5	14	14
9	"	"	"	"	14	28
10	"	"	"	"	14	42
11	"	"	"	"	14	56
12	"	"	"	"	14	70
1 PM	"	"	"	"	14	84
2	"	"	"	"	14	98
3	"	"	"	"	14	112
4	"	"	"	"	13	126
5	"	"	"	"	12	140
6	"	"	"	"	12	154
7	"	"	"	"	12	168
8	"	"	"	"	12	182
9	"	"	"	"	12	196
10	"	"	"	"	12	210
11	"	"	"	"	12	224
12	"	"	"	"	12	238
1 PM	"	"	"	"	12	252
2	"	"	"	"	12	266
3	"	"	"	"	12	280
4	"	"	"	"	12	294
5	"	"	"	"	12	308
6	"	"	"	"	12	322
7	"	"	"	"	12	336
8	"	"	"	"	12	350
9	"	"	"	"	12	364
10	"	"	"	"	12	378
11	"	"	"	"	12	392
12	"	"	"	"	12	406
1 PM	"	"	"	"	12	420
2	"	"	"	"	12	434
3	"	"	"	"	12	448
4	"	"	"	"	12	462

Exp #38A-B

Cast anode
+ Maple piston
Transferred from
#2 H Bath.
Polished disc.

Aug 12, 2001

Aug 13, 2001

#6 Cu Bath

Epo 387-B

TIME	89g	Temp	Volt	amp	Total
5 AM	1170	80	9.5	12.5	403
6 00	"	"	"	12.5	415
7 00	"	"	"	12.5	428
8 00	"	"	9	12	440
9 00	"	"	8.5	11	451
10	"	"	"	12.5	468
11	"	"	"	12.5	476
12	"	"	"	12.5	489
1 PM	"	"	"	12.5	504
2	"	"	"	12.5	519
3	"	"	"	12.5	539
4	"	"	"	12.5	564
5	"	"	"	12.5	589
6	"	"	"	12.5	614
7	"	"	"	12.5	639
8	"	"	"	12.5	664
9	"	"	"	12.5	689
10	"	"	"	12.5	714
11	"	"	"	12.5	739
12	"	"	"	12.5	754
1 PM	"	"	"	12.5	774
2	"	"	"	12.5	794
3	"	"	"	12.5	814
4	"	"	"	12.5	834
5	"	"	"	12.5	854
6	"	"	"	12.5	874
7	"	"	"	12.5	894
8	"	"	"	12.5	914
9	"	"	"	12.5	934
10	"	"	"	12.5	954
11	"	"	"	12.5	974
12	"	"	"	12.5	994
1 PM	"	"	"	12.5	1014
2	"	"	"	12.5	1034
3	"	"	"	12.5	1054
4	"	"	"	12.5	1074
5	"	"	"	12.5	1094
6	"	"	"	12.5	1114
7	"	"	"	12.5	1134
8	"	"	"	12.5	1154
9	"	"	"	12.5	1174
10	"	"	"	12.5	1194
11	"	"	"	12.5	1214
12	"	"	"	12.5	1234
1 PM	"	"	"	12.5	1254
2	"	"	"	12.5	1274
3	"	"	"	12.5	1294
4	"	"	"	12.5	1314
5	"	"	"	12.5	1334
6	"	"	"	12.5	1354
7	"	"	"	12.5	1374
8	"	"	"	12.5	1394
9	"	"	"	12.5	1414
10	"	"	"	12.5	1434
11	"	"	"	12.5	1454
12	"	"	"	12.5	1474
1 PM	"	"	"	12.5	1494
2	"	"	"	12.5	1514
3	"	"	"	12.5	1534
4	"	"	"	12.5	1554
5	"	"	"	12.5	1574
6	"	"	"	12.5	1594
7	"	"	"	12.5	1614
8	"	"	"	12.5	1634
9	"	"	"	12.5	1654
10	"	"	"	12.5	1674
11	"	"	"	12.5	1694
12	"	"	"	12.5	1714
1 PM	"	"	"	12.5	1734
2	"	"	"	12.5	1754
3	"	"	"	12.5	1774
4	"	"	"	12.5	1794
5	"	"	"	12.5	1814
6	"	"	"	12.5	1834
7	"	"	"	12.5	1854
8	"	"	"	12.5	1874
9	"	"	"	12.5	1894
10	"	"	"	12.5	1914
11	"	"	"	12.5	1934
12	"	"	"	12.5	1954
1 PM	"	"	"	12.5	1974
2	"	"	"	12.5	1994
3	"	"	"	12.5	2014
4	"	"	"	12.5	2034
5	"	"	"	12.5	2054
6	"	"	"	12.5	2074
7	"	"	"	12.5	2094
8	"	"	"	12.5	2114
9	"	"	"	12.5	2134
10	"	"	"	12.5	2154
11	"	"	"	12.5	2174
12	"	"	"	12.5	2194
1 PM	"	"	"	12.5	2214
2	"	"	"	12.5	2234
3	"	"	"	12.5	2254
4	"	"	"	12.5	2274
5	"	"	"	12.5	2294
6	"	"	"	12.5	2314
7	"	"	"	12.5	2334
8	"	"	"	12.5	2354
9	"	"	"	12.5	2374
10	"	"	"	12.5	2394
11	"	"	"	12.5	2414
12	"	"	"	12.5	2434
1 PM	"	"	"	12.5	2454
2	"	"	"	12.5	2474
3	"	"	"	12.5	2494
4	"	"	"	12.5	2514
5	"	"	"	12.5	2534
6	"	"	"	12.5	2554
7	"	"	"	12.5	2574
8	"	"	"	12.5	2594
9	"	"	"	12.5	2614
10	"	"	"	12.5	2634
11	"	"	"	12.5	2654
12	"	"	"	12.5	2674
1 PM	"	"	"	12.5	2694
2	"	"	"	12.5	2714
3	"	"	"	12.5	2734
4	"	"	"	12.5	2754
5	"	"	"	12.5	2774
6	"	"	"	12.5	2794
7	"	"	"	12.5	2814
8	"	"	"	12.5	2834
9	"	"	"	12.5	2854
10	"	"	"	12.5	2874
11	"	"	"	12.5	2894
12	"	"	"	12.5	2914
1 PM	"	"	"	12.5	2934
2	"	"	"	12.5	2954
3	"	"	"	12.5	2974
4	"	"	"	12.5	2994
5	"	"	"	12.5	3014
6	"	"	"	12.5	3034
7	"	"	"	12.5	3054
8	"	"	"	12.5	3074
9	"	"	"	12.5	3094
10	"	"	"	12.5	3114
11	"	"	"	12.5	3134
12	"	"	"	12.5	3154
1 PM	"	"	"	12.5	3174
2	"	"	"	12.5	3194
3	"	"	"	12.5	3214
4	"	"	"	12.5	3234
5	"	"	"	12.5	3254
6	"	"	"	12.5	3274
7	"	"	"	12.5	3294
8	"	"	"	12.5	3314
9	"	"	"	12.5	3334
10	"	"	"	12.5	3354
11	"	"	"	12.5	3374
12	"	"	"	12.5	3394
1 PM	"	"	"	12.5	3414
2	"	"	"	12.5	3434
3	"	"	"	12.5	3454
4	"	"	"	12.5	3474
5	"	"	"	12.5	3494
6	"	"	"	12.5	3514
7	"	"	"	12.5	3534
8	"	"	"	12.5	3554
9	"	"	"	12.5	3574
10	"	"	"	12.5	3594
11	"	"	"	12.5	3614
12	"	"	"	12.5	3634
1 PM	"	"	"	12.5	3654
2	"	"	"	12.5	3674
3	"	"	"	12.5	3694
4	"	"	"	12.5	3714
5	"	"	"	12.5	3734
6	"	"	"	12.5	3754
7	"	"	"	12.5	3774
8	"	"	"	12.5	3794
9	"	"	"	12.5	3814
10	"	"	"	12.5	3834
11	"	"	"	12.5	3854
12	"	"	"	12.5	3874
1 PM	"	"	"	12.5	3894
2	"	"	"	12.5	3914
3	"	"	"	12.5	3934
4	"	"	"	12.5	3954
5	"	"	"	12.5	3974
6	"	"	"	12.5	3994
7	"	"	"	12.5	4014
8	"	"	"	12.5	4034
9	"	"	"	12.5	4054
10	"	"	"	12.5	4074
11	"	"	"	12.5	4094
12	"	"	"	12.5	4114
1 PM	"	"	"	12.5	4134
2	"	"	"	12.5	4154
3	"	"	"	12.5	4174
4	"	"	"	12.5	4194
5	"	"	"	12.5	4214
6	"	"	"	12.5	4234
7	"	"	"	12.5	4254
8	"	"	"	12.5	4274
9	"	"	"	12.5	4294
10	"	"	"	12.5	4314
11	"	"	"	12.5	4334
12	"	"	"	12.5	4354
1 PM	"	"	"	12.5	4374
2	"	"	"	12.5	4394
3	"	"	"	12.5	4414
4	"	"	"	12.5	4434
5	"	"	"	12.5	4454
6	"	"	"	12.5	4474
7	"	"	"	12.5	4494
8	"	"	"	12.5	4514
9	"	"	"	12.5	4534
10	"	"	"	12.5	4554
11	"	"	"	12.5	4574
12	"	"	"	12.5	4594
1 PM	"	"	"	12.5	4614
2	"	"	"	12.5	4634
3	"	"	"	12.5	4654
4	"	"	"	12.5	4674
5	"	"	"	12.5	4694
6	"	"	"	12.5	4714
7	"	"	"	12.5	4734
8	"	"	"	12.5	4754
9	"	"	"	12.5	4774
10	"	"	"	12.5	4794
11	"	"	"	12.5	4814
12	"	"	"	12.5	4834
1 PM	"	"	"	12.5	4854
2	"	"	"	12.5	4874
3	"	"	"	12.5	4894
4	"	"	"	12.5	4914
5	"	"	"	12.5	4934
6	"	"	"	12.5	4954
7	"	"	"	12.5	4974
8	"	"	"	12.5	4994
9	"	"	"	12.5	5014
10	"	"	"	12.5	5034
11	"	"	"	12.5	5054
12	"	"	"	12.5	5074
1 PM	"	"	"	12.5	5094
2	"	"	"	12.5	5114
3	"	"	"	12.5	5134
4	"	"	"	12.5	5154
5	"	"	"	12.5	5174
6	"	"	"	12.5	5194
7	"	"	"	12.5	5214
8	"	"	"	12.5	5234
9	"	"	"	12.5	5254
10	"	"	"	12.5	5274
11	"	"	"	12.5	5294
12	"	"	"	12.5	5314
1 PM	"	"	"	12.5	5334
2	"	"	"	12.5	5354
3	"	"	"	12.5	5374
4	"	"	"	12.5	5394
5	"	"	"	12.5	5414
6	"	"	"	12.5	5434
7	"	"	"	12.5	5454
8	"	"	"	12.5	5474
9	"	"	"	12.5	5494
10	"	"	"	12.5	5514
11	"	"	"	12.5	5534
12	"	"	"	12.5	5554
1 PM	"	"	"	12.5	5574
2	"	"	"	12.5	5594
3	"	"	"	12.5	5614
4	"	"	"	12.5	5634
5	"	"	"	12.5	5654
6	"	"	"	12.5	5674
7	"	"	"	12.5	5694
8	"	"	"	12.5	5714
9	"	"	"	12.5	5734
10	"	"	"	12.5	5754
11	"				

7 Bath Ru

39+B

TIME	Sp. Gr.	Temp	Volta	Amp	Settl
10 PM	11.70	80	9	14	
"	"	"	"	14	14
12	"	"	"	14	28
1	"	"	"	14	42
2	"	"	"	14	56

Out

One minute
in the Bath
then run for
4 hours
in Copper
bath

Want to
see if dents
appear.

Remarks: Dents did not
appear after stripping, but
center was bare.

Bath Lu

IME	Spgr	Temp	Volt	Clamp	Wired
1170			7	17	
"	"	"	"	"	"
"	"	"	"	"	"
"	"	"	"	"	"
"	"	"	"	"	"

5 Amps for 3 min
 then 5 Amps 1 hr
 then to 15 Amps
 Back up

#4 Both Cu.

Started Aug 18

Time	Temp	Temp	Volt	Temp	Total
10:00	122.5	75	9	5	
11:00	"	"	"	15	15
12:00	"	"	"	15	30
avg 19-20.					
1:00	127.5	75	9	15	45
2:00	"	"	"	15	60
3:00	"	"	"	15	75
4:00	"	"	"	13	88
5:00	"	"	"	11	99
6:00	"	"	"	13.5	112.5
7:00	"	"	"	12.5	125
8:00	"	"	"	12.5	137.5
9-10	"	"	"	12.5	150
11-	"	78	9	12.5	162.5
12-	"	"	"	14.5	177
1:00	120	"	"	12.5	189.5
2-	"	"	"	12.5	202
3-	"	"	"	12.5	214.5
4	"	"	"	13	227.5
5	"	"	"	13	240.5
6	"	"	9.5	12.5	253
7	"	"	"	12.5	265.5
8	"	"	"	12.5	278
9	"	"	"	12.5	290.5
10	"	"	"	12.5	303
11	"	"	"	12.5	315.5
12	"	"	"	12.5	328

5 Amps for 3 min
 then 5 " 1 hour then
 boosted to 15 Amps &
 back up.

3 Bath

Started Aug 18-20

5 Amps 3 min
 5 " 1 hr
 then boost to 15 Amps

Time	Temp	Temp	Temp	Temp	Temp
PM	1200	1225	75	9	5
Aug 17	105	"	"	"	15
	2.00	"	"	"	15
	3.00	"	"	"	15
	4.00	"	"	"	15
	5.00	"	"	"	15
	6.00	"	"	"	15
	7.00	"	"	"	15
	8.00	"	"	"	15
	9	"	"	"	15
	10	"	"	"	15
	11	"	78	"	15
	12	"	"	"	15
	1.00	1230	"	"	15
	2	"	"	"	15
	3	"	"	"	15
	4	"	"	"	15
	5	"	"	"	15
	6	"	"	"	15
	7	"	"	"	15
	8	"	"	"	15
	9	"	"	"	15
	10	"	"	"	15
	11	1200	"	"	15
	12	"	"	"	15

#3 Bath

Continued starting 18 @ 10 AM 5 amps
 Date Time Sp. L. Temp. Volts Amp. Total 300

1979.

1 AM

2

3

4

5

6

7

8

9

10

11

12

1 PM

2

3

4

5

6

7

8

9

10

11

of Bath

Continued Start Aug. 18, 20. at 101

TIME Sp gr Sup Volt Amp Wt. lbs.

1811
2
3

Aug. 20

Telegraph Record
Master

#5 Bath Cu

Telegraph Record

Started Aug 19, 20 @ 10:15 AM

Est. 477.42

Time	Sp & Amp	Volt	Amp	Total
10:30 AM	122.5	95	4	
11:30	122.5	75	4	4
12:30	"	"	4	8
1:30	"	"	4	12
2:30	"	"	4	16
3:30	"	"	4	20
4:30	"	"	4	24
5:30	"	95	4	28
6:30	"	"	4	32
7:30	"	80	4	36
8:30	"	"	4	40
9:30	122.0	"	4	44
10:30	"	"	4	48
11:30	"	"	4	52
12:30	"	"	4	56
1:30	"	95	4	60
2:30	"	"	4	64
3:30	"	"	4	68
4:30	"	"	4	72
5:30	"	"	4	76
6:30	"	"	4	80
7:30	"	"	4	84
8:30	"	"	4	88
9:30	"	"	4	92
10:30	"	"	4	96

#5 Bath Cu
Aug 19, 20 at
16:30
Aug 20
Total
Est. 477.42
for 5 hours

#5 Bath Cr

Started Aug 19-20

497B

TIME	Temp	Winds	Ampl	Winds
11:30	17.75	80	9/8	126
12:0	"	"	"	334
12:30	"	"	"	328
1:00	"	"	"	376
1:30	"	"	"	404
2:00	"	"	"	432
2:30	"	"	"	460
3:00	"	"	"	488
3:30	"	"	"	516
4:00	"	"	"	544
4:30	"	"	"	572
5:00	"	"	"	600
5:30	"	"	"	628
6:00	"	"	"	656
6:30	"	"	"	684
7:00	"	"	"	712
7:30	"	"	"	740
8:00	"	"	"	768
8:30	"	"	"	796

Aug. 21, 20.

Aug. 22

Aut

Don't throw switch
into meter unless resistance
on the wood spool is cut out,
because you only will plate at
4 amp. —

#6 Bath

Started Aug. 19. 20

Time	8:45	Temp	Volts	amp	total	Remarks
2.30	1220	75	7.5	4		Washed from
AM	Aug	20				#1 No Bath
1.30	1220	78	9.5	15	15	and in bed
1.00	"	"	"	15	30	started at 4.30
				6.00		

#6 Bath

Time	8:45	Temp	Volts	amp	total	Remarks
2.00	1220	75	9.5	4		Washed
2.04	"	"	"	4	4	then 15 mins
4.00	"	"	"	14	28	in blackness
5.00	"	78	"	14	42	3 Rows then
6.00	"	"	"	14	56	current time
7.00	"	"	"	14	70	at 4.30
7.00	"	80	"	14	84	

#7 Bath

Started Aug 19-20

Time	SPGR	Temp	Vols	Amps	Total	Remarks
12.30	1220	75	9.5	4		Transfer from
AM	Aug 20					#7 Bath
1.30	1220	78	9.5	15		Not marked
2.00	"	"	"	15	30	Started at 4 Amps

#7 Bath

Aug. 20-20

Time	SPGR	Temp	Vols	Amps	Total	Remarks
3.00	1220	75	9.5	4		#1 Bath
3.00	"	"	"	4	4	Bath Washed
4.00	"	"	"	14	38	then 15 seconds
5.00	"	79	"	14	42	in Elect. Column
6.00	"	"	"	14	56	3 Rev. then
7.00	"	"	"	14	70	current on at
8.00	"	80	"	14	84	4 Amps

Polish twice over clean
in water, rinse distill, then clean
in Electric Cleaner wash & rinse
distill water
8-4 Wash then in in Bath to
40 amps & strips.
Put in wet, one revolution then
40 amps for 3 hours, then full current to
40 amps & strips.
Then polish again twice
over and plate again till we
decide to stop.

Aug 26 20

TIME	Temp	Volts	Amps	total
6	12.80	100	9	4
7	"	"	9	4
8	"	"	9	4
9	"	"	9	4
11	"	"	9	12
12	12.75	108	9	21
1	1.30 PM	"	9	30
2	"	"	9	39
3	"	"	9	48
4	"	"	9	57
5	"	"	9	66
6	"	"	8.5	74
7	"	"	8.5	83
8	"	"	8.5	91
9	"	"	8.5	100

#50A
1st stripping

1st stripping

2nd stripping

OK

Out

Aug 27, 20.

10 AM	Sp. Wt.	Temp	Ort	Amph	Stel
11	1295	98	9.	4	4
12	"	"	"	4	8
1 PM	"	"	"	4	12
2	1280	100	"	9	21
3	"	"	"	9	30
4	"	"	"	9	39
5	"	"	"	9	48

Master 504
2nd stripping

Not polished
and 26 secured
in 8-4

2nd strip
OK
Gut

August 28

9:30	12:00	100	9	20	9:30
10:30	"	"	"	4	4
11:30	"	"	"	4	4
12:30	"	"	"	4	8
1:30 PM	"	"	"	4	12
2:30	"	"	"	9	21
3:30	"	"	"	9	30
4:30	"	"	"	9	39
5:30	"	"	"	9	48
6:30	"	"	"	9	57
7:30	"	"	"	9	66
8:30	"	"	"	9	75
9:30	"	"	"	9	84

Master
3rd stripping
Not polished
and 20 sec.
in 8-4

3rd strip
OK
Gut

Martín #597

4th strip mining

Started Aug 28-20

TIME	SPGR	Temp	Voltage	Amb	Wet	Notes
12:45 AM	1280	98°	9	4	4	Not Polished.
1 PM			9	4	4	4 th strip - 15 min East of
2 "				4	8	Recon
3 "				4	12	20 sec 8-4
4				9	21	
5				9	30	OK
6				9	39	11 th strip
7				9	48	1 st strip
8:28 AM	280	100	9	4	4	Martín #507
9 PM				4	4	Not Polished
10				4	4	15 min East of
11				4	12	Recon
12				9	21	20 sec 8-4
1 AM				9	30	
2				9	39	5 th OK
3				9	48	Strip mining
4				9	57	
5				9	66	
6				9	75	
7				9	84	
8				9	93	Out

Aug 29, 20.

Master #53A

Start Aug 30 20

Time	Spide Temp	W. Temp	W. Temp	W. Temp	W. Temp	Remarks
9:30 AM	1280	95	9	41		
10:30				3.5	3	Not finished
11:30				3.5	7	15 sec. East bar
12:30				8.5	15	20" ? - L
1:30 PM				8.5	24	
2:30				8.5	32	
3:30				8.5	41	
4:30				8.5	49	

Start Aug 30 20 @ 10 AM

Time	Spide Temp	W. Temp	W. Temp	W. Temp	W. Temp	Remarks
10 AM	1280	95	95	3.5		# 50 ft. Sp
11	"	"	"	3.5	3	Master
12	"	"	"	9	12	Not finished
1:30 PM	1270	100	"	9	21	15 sec. East bar
2			"	9	30	20" ? - L
3			"	9	39	
4			"	9	48	# 7th
5			9	9	57	Thompson
6			"	9	66	Eight
7			"	8.5	75	stitch at
8			"	8.5	83	
9			"	8.5	92	Cent

Master

Started Aug 31, 20. 9:30 AM. Exp # 50 H

Time	Exp	Temp.	Volt	Ampl	Steel	Remarks
9:30 AM	1250	90	9	3.5		
10:30				3.5	3	Not Polished
11:30				9	12	15 sec. Elect. Clean
12:30				9	21	20 " 8-4
1:30 PM		100		9	30	8 th
2:30				9	39	
3:30				9	48	
4:30				9	57	Stripping
5:30				9	63	simultaneously
6:30				9	72	Out

Aug 31, 20. 12:30 PM. Master 50 H

Time	Exp	Temp.	Volt	Ampl	Steel	Remarks
12	1250	98	9	3.5	3	Not Polished
1 AM				9	12	15 seconds
2				9	21	Elect. Clean
3				9	30	1 1/2 min. 8-4
4				9	39	9 th
5				9	48	Stripping
6				9	57	OK
7				9	66	
8				9	71	Out
8:30				4.5		

Started Sept. 12th

Time	Sp	Sl	Temp	Volts	amps	Total
12:00 PM	1280	95	9.5	3.5		
1:00				9	3	
1:30				9	12	
2:00				9	21	
2:30 PM				9	30	
2:30				9	39	
3:00				9	48	
4:00				9	57	
5:30				9	66	
6:30				9	75	

Meters
Exp # 50A

Remarks
not polished
15 sec. East Clin.
20 " 8-4

10th
Shipping

Out

Started Sept. 12th

Time	Sp	Sl	Temp	Volts	amps	Total
1 PM	1280	100	9.5	3.5		
2				9	3	
1:15 PM				9	12	
				9	21	
				9	30	
				9	39	
				9	48	
				9	57	
				9	66	
				9	75	

Meters
Exp # 50.7

Remarks
not polished
15 sec. East Clin.
20 " 8-4

11th
Shipping

Out

Seid not strip easily. Upper face
has some of the m. sticking. Stripped
Scratched at repair department for
the above defect & fixed over.

[ITEM(S) FOUND IN BOOK]

5³⁰
PM.
Aug. 26, 20.
At 1st Polish twice over clean in water
+ then clean Elec, wash, then 8/4 -
Dash then in No Bath 40
amperes - Strip -
Then polish again twice over
+ plate again + so
on until we decide to
stop -

Notebook Series -- Notebooks by Edison and Other Experimenters
Disc Plating Experiments
Notebook, N-20-07-10

This notebook was used during July-August 1920 by Edison, Walter N. Archer, Frank Dettlef, Jr., Howard F. Redford, and possibly other experimenters. The entries pertain to the plating processes involved in the manufacture of disc records. At the beginning of the book are tabular reports by Archer of molds plated in various baths with information on the date and time, specific gravity, volts, amps, and other conditions during plating. Also included is a series of numbered experiments by Archer on different methods of handling the molds prior to plating, such as placing them in the bath both wet and dry and with the current both on and off. There are also a few experiments to determine how many molds can be made from one female. Several pages of instructions by Edison have been inserted into the book. The front cover is labeled "July 10, 20-To Aug 19-20-" and "Disc Record" and is marked "Nickel Bath Exper." The pages are unnumbered, and several pages have been removed from the book. Approximately 100 pages have been used.

Michael Bath #1
 Copper face rim 2 minutes before August
 put on

JULY	Alt	Bar	Temp	Wind
10-60 AM	1280	9.5	8.5	84
11	1280	9.5	9	92
12 PM	1280	9.5	9	92
1.00	1280	9.5	9	95
2.00	1280	9.5	9	100
3.00	1280	9.5	10	102
4-	1280	9.5	10	102
5	1280	9.5	10	98
6	1280	9.5	10	98
7	1280	9.5	10	105

Out

Transferred in #1 & #2
 Copper Bath

Nickel Bath No 2
Nickel Pan

JULY 10	SLM	Delta	Comp	Comp	Total
AM	1280	9.5	11	86	
10:00	1280	9.5	12	92	12
11	1280	9.5	12	92	124
12	1280	9.5	12	95	36
1:00 PM	1280	9.5	12	97	48
2	1280	9.5	12	99	60
3	1280	9.5	13	101	73
4	1280	9.5	13	100	86
5	1280	9.5	13	98	99
6	1280	9.5	13	98	112
7	1280	9.5	13	105	125

Out

Transferred in 9:15 7:10
Copper Bath

When No 1 Mould was put in
had two dints on face

Nickel Bath No 1

run to minutes before current
out on

JULY	Sh	Volts	Amp	Amp	Test
10 PM					
9:00	1265	9.5	11	98	
10:00	1265	9.5	11	99	11
11:00	1265	9.5	11	99	22
12:00	1265	9.5	11	99	33
AM	July	10			
1:00	1265	9.5	11	99	44
2:00	1265	9.5	11	99	55
3:00	1265	9.5	11	99	66
4:00	1265	9.5	10	99	76
5:00	1270	9.5	10	99	86
6:00	1270	9.5	9.5	99	95
7:00	1270	9.5	9.5	99	105
8:00	1270	9.5	10	100	115
9:00	1270	9.5	10	100	125
10:00	1270	9.5	10	100	135
11:00	1270	9.5	10	100	145
12:00	1270	9.5	10	100	155

Out

Transfer to
5 Bath Oppen
put in dry at
3.6 Amp. of metal
one minute then
full current on.

#2 Nickel Bat

run 2 minutes before current put on

JULY	Ln	Volt	Amper	Watt
P.M.				
9:00	1265	9-5	95	95
10:00	1265	9-5	13	95 13
11	1265	9-5	13	95 26
12	1265	9-5	13	95 39
A.M.	July 10			
1:00	1265	7-5	13	95 52
2:00	1265	9-5	13	96 65
3:00	1265	9-5	13	96 78
4:00	1265	9-5	12-5	96 70
5:00	1270	9-5	13	98 103
6:00	1270	9-5	13	77 116
7:00	1270	7-5	13	77 129
8:00	1270	9-5	12-5	97 142
9:00	1270	9-5	12-5	100 154
10:00	1270	9-5	12-5	100 167
11:00	1270	9-5	12-5	100 179
12:00	1270	9-5	12-5	110 192

14
13
135

Out
Transfer to
31 Batch Copper
Piston in wet
1 min. at 36 Amps
9th noted when
full current on

No 2 Michel Mould put in cleaning
Bath. for 20 seconds put in 8-4 for 2 weeks

No 2 Michel Bath

JULY	Time	Fills	Amf	Amf	Notes	
11 PM	1265	9-5	12	90		
5:00	1265	9-5	12	92	12	
6:00	1265	9-5	12-5	93	24	
7	1290	9-5	12-5	93	37	Out
8						
9						
10						

16/160/10.

Start July 12, 20. at 1. PM
 Finish " 12 " " 5. PM
 Total Amps 160.
 " hours 16
 Average Amps 10.

Nickel Bath No 1

Time	Volts	Amps	Volts	Amps	Total
1:00	12.65	9.5	10	96	
2:00	12.65	9.5	11	90	11
3:00	12.65	9.5	11	90	22
4:00	12.65	9.5	10.5	94	32
5:00	12.70	9.5	10.5	96	43
6:00	12.70	9.5	9.5	96	52
7:00	12.70	9.5	9.5	98	62
8:00	12.70	9.5	9.5	100	71
9:00	12.75	9.5	9	100	81
10:00	12.75	9.5	9.5	99	90
11:00	12.80	9.5	9.5	99	100
12:00	12.80	9.5	10	100	110
1:00 PM	12.80	9.5	10	100	120
2:00	12.80	9.5	10	105	130
3:00	12.80	9.5	10	103	140
4:00	12.80	9.5	10	100	150
5:00 PM	12.80	9.5	10	100	160

Transfer to
 #2 Copper
 bath.
 1 min at 2.3
 amp - 6 second
 then full current
 per.

752 Nickel Bath

JULY 13	Shn	Bath	Amp	Temp	Notes
1:41	1265	9.5	12	90	
1:00	1265	9.5	12	91	12
2:00	1265	9.5	12	91	24
3:00	1265	9.5	12	93	36
4:00	1270	9.5	13	96	49
5:00	1270	9.5	13	96	52
6:00	1270	9.5	13	96	75
7:00	1270	9.5	13	96	88
8:00	1275	9.5	13	102	101
9:00	1275	9.5	13	100	114
10:00	1280	9.5	13	100	127
11:00	1280	9.5	13	100	140
12:00	1280	9.5	13	100	153
1:00	1280	9.5	13	100	166
2:00	1280	9.5	12.5	103	178
3:00	1280	9.5	13	98	191
4:00	1280	9.5	13	104	204
5:00	1280	9.5	13	104	217
6:00	1280	9.5	13	-	
7:00	1280	4.5	13	-	

Cent
Transferred to
Bath Cu.
1 minute at
2.3 Amps
6th notch,
then full
current.

98
11 13 26
138

15
12 32
12 32
12 32

Rudolf's 2-Minutes Nickel Bath
put in dry

$$17 \overline{) 171} \quad 10.$$

Total Amps. 171.
hours. 17
Average Amps. 10.

ME 1 Nickel Bath

JULY	Start	July 12, 20	at 6:30 PM		
12 PM	Start	End	Time	Time	Total
6-30	1270	9-5	11	97	
7-30	1270	9-5	11	98	11
8-30	1270	9-5	11	98	22
9-30	1270	9-5	10.5	98	33
10-30	1270	9.5	11	103	44
11-30	1270	9.5	11	98	55
12-30	1270	9.5	11	98	66
1-30	1270	9.5	11	98	77
2-30	1270	9.5	10	98	87
3-30	1270	9.5	9-5	97	97
4-30	1270	9.5	9-5	97	106
5-30	1270	9.5	9-5	97	116
6-30	1270	9.5	9-5	97	125
7-30	1270	9.5	7	98	134
8-30	1275	9.5	9	97	143
9-30	1275	9.5	9.5	97	153
10-30	1275	9.5	9.5	101	162
11-30	1275	9.5	8.5	100	171

Transfer to
#8 in bath
July 13, 20.
P.T. in wet
in bath
Smith's Co.

Pact in dry
 Revolver 2 min. in. 13.2
 full current

NS 191 12.3
 15.5
 360
 310
 500
 465

Start July 12, 20. at 6³⁰ PM
 Finish " 13, 20- " 10. AM.
 Total Amps 191
 " hours 15 1/2
 Average Amps 12.3

Nickel Bath No 2

July	Started	July	12, 20	at	6 ³⁰ PM.
12 PM	Sh	Volts	Amps	Temp	Total
6-30	1270	9.5	12	95	
7-30	1270	9.5	12.5	97	12
8-30	1270	9.5	12.5	97	25
9-30	1270	9.5	12.5	95	37
10-30	1270	9.5	13	103	50
11-30	1270	9.5	13.5	94	64
12-30	1270	9.5	13.5	94	77
July					
1, 30	1270	9.5	12.5	96	90
2, 30	1270	9.5	12	95	102
3, 30	1270	9.5	12	95	114
4, 30	1270	9.5	12	95	126
5, 30	1270	9.5	12	95	138
6, 30	1270	9.5	12	95	150
7, 30	1270	9.5	11.5	94	161
8-30	1275	9.5	12	96	173
9-30	1275	9.5	12	97	185
10-	1275	9.5	12	97	191

12
 191
 51

Out
 Transfer to
 #7 low bath
 July 13, 20,

~~#1 in Bath~~
~~Started July 13, 20~~ 12 noon
Time Sp. Sub. Alt. Camp Temp Total

Revised 2 minutes in Ni bath no current
then full current on.

8) 95.8 | 11.8
188
70

Start July 13, 20 at 2:30 PM.
Finish " 13, " " 10 PM.
Total Amps. 95
" hours. 8
Average Amps. 11.8

#2 Ni Bath.

Started July 13 20- 2:30 PM.

Time	Sp. Gr.	Volt	Dist.	Temp.	Total
2:30 PM	1280	9.5	12.5	106	
3:30	1280	9.5	12.0	97	12
4:30	1280	9.5	12.1	99	24
5:30	1280	9.5	12	101	36
6:30	1280	9.5	12	100	48
7:30	1280	9.5	12	100	60
8:30	1280	9.5	11.5	99	72
9:30	1280	9.5	11.5	98	83
10 PM	1280	9.5	12	98	95

added acetic acid

Cent.

Using ground
after ammonia water
wash & rinse distill
and dried.

Transfer to #
3 Copper bath

Nickel No 1 Bath

Started July 13. at 12 PM

PM	SEGR.	VOLTS	AMP.	TEMP	TOTAL
12.00	12.60	9.5	10	95	
1.00	12.60	9.5	10.5	96	10
2.00	12.60	9.5	11	97	21
3.00	12.60	9.5	11	97	33
4.00	12.60	9.5	11	96	43
5.00	12.60	9.5	11	96	54
6.00	12.60	9.5	11	97	64
7.00	12.60	9.5	11	97	74
8.00	12.60	9.5	11	96	84
9.00	12.60	9.5	9.5	96	93
10.00	12.70	9.5	9.5	94	98
11.00	12.70	9.5	9.5	98	107

Transfer to
6 Golyer bath
Put in wet

11' 107 / 9.7
80

Total Amps 107
" losses 11
Average Amps 9.7

Revolves 2 min in Ni bath no current

12 | 143 | 12.
 $\frac{143}{12}$

Total Amps 143
 " hours 12
 Average Amps 12

Nickel No 2 Bath
 Started July 13 at 12 PM

PM	SP. GR.	VOLTS	AMP.	TEMP	TOTAL
12.00	12.60	9.5	12	94	
1.00	12.60	9.5	12	94	12
2.00	12.60	9.5	12	96	24
3.00	12.60	9.5	12	96	36
4.00	12.60	9.5	12	95	48
5.00	12.60	9.5	12	95	60
6.00	12.60	9.5	12	95	72
7.00	12.60	9.5	12	95	84
8.00	12.60	9.5	11.5	95	95
9 -	12.65	9.5	11.5	95	107
10 -	12.70	9.5	12	95	119
11 -	12.70	9.5	12	97	131
12	12.70	9.5	12	97	143

Transferred
 #5 copper bath
 Put in dry

20 seconds in Electric Cleaner.

8-4

20

Put in dry

2 minutes revolved, then current

#1-Nickel Bath

Started July 14, 20 at 1 P.M.

Time S. G. Volts Amps Temp Total

1 P.M. 1270 9.5 9.5 99

2-1265 9.5 10 104 10

3-1265 9.5 10 104 20

4-1265 9.5 10 105 30

5-1265 9.5 10 106 40

added acid
active
just

Transfer to #4
Copper Bath.

#2 Nickel Bath. Started July 14, 20 6 P.M.

Time	S.G.	Volts	Amps	Temp.	Total
1 P.M.	1.270	9.5	12	102	
2-	1.265	9.5	12.5	102	12
3-	1.265	9.5	12.5	102	25
4-	1.265	9.5	13	103	38
5-	1.265	9.5	13	104	51

Added acid
acetic.

Transfer to #2
Pot-pour bath.

When #2 is dis-
posed, put more
nickel in anode
chamber.

OK

marked 45
connected to 51

4) 51 (12.7)
30

Total amps = 48 51
" hours = 4
Average Amps = 12.7

Ni face disc
 Put in Ni bath full current dry
 When put in capacitor bath
 put in dry, full current on.
 Total Amps 97 Ni bath.

10/97 | 9.7

Total Amps = 97
 " hours = 10
 Average Amps = 9.7

Ni Bath started July 14, 20. @ 12 PM.

Time	SS	g	Water	Amps	Temp	Total
12.00	129	9.5	10	95		
1M	July	15				
1.00	129	9.5	10	95	10	
2.00	1270	9.5	10	95	20	
3.00	1270	9.5	10	95	30	
4.00	1270	9.5	10	95	40	
5.00	1270	9.5	10	95	50	
6.00	1270	9.5	10	95	60	
7.00	1270	9.5	10	95	70	
8.00	1270	9.5	10	95	80	
9-	1280	9.5	9.5	98	88	
10	1280	9.5	9.	98	97	

Sawed blistor
 disc
 Out
~~Transfer to~~
~~capacitor bath, with~~
~~full current dry~~

Showed blistor at 8⁰⁰ July 14, 20.
 Mr Edison stripped this disc.

in face disc.

Put in Ni bath full current wet

When put in copper bath put
in dry full current on!

Total Amps 128 Ni bath,

10 | 128 | 12.8

Total Amps 128
" hours 10
Average Amps 12.8

#2 in Bath

Started July 18, 20 - @ 12 P.M.

PM	SRGA	VOLTS	AMP	TEMP	TOTAL
12.00	1270	9.5	12	92	
AM	1270	9.5	12	94	12
1.00	1270	9.5	12	94	12
2.00	1270	9.5	12	94	12
3.00	1270	9.5	12	94	12
4.00	1270	9.5	12	94	12
5.00	1270	9.5	12	94	12
6.00	1270	9.5	12	94	12
7.00	1270	9.5	12	94	12
8.00	1270	9.5	12	94	12
9.00	1280	9.5	13	96	115
10.00	1280	9.5	13	96	128

~~Stop~~
~~Remove~~
~~Stop~~
~~Full current dry~~
Mr Edison Stopped this day.

Ni face disc.
Electric cleaner. 30 seconds.

8-4. one minute

Put in Ni Bath dry
Full current on.

#1 shows blisters after 20 minutes

#1 in Bath

Started July 15, 20. 11³⁰ AM.

Time	Sp. Br	Voltage	Temp	Temp	Temp
11:29 AM	1280	9.5	10	88	
12:30	1280	9.5	10	89	10
1:30	1280	9.5	10	90	20
2:30	1280	9.5	10		30

Out

Elect. Clean 30 sec.
8-4 60 "
very in Bath full
current on.

Taken out to try stripping
from blisters

in face disc.

Electric Cleaner 30 seconds

8-4 One minute

Put in in Bath wet
full current on

#2 Ni Bath

Started July 15 20

11:30 AM.

Time	Sp. In	Volt	Temp	Watts	Total
11:30	1280	9.5	12	88	
11:35	1280	9.5	12	89	12
11:40	1280	9.5	12	90	24
11:45	1280	9.5	12	90	36

Out

Taken out to
try stopping
from blister

Hi face wise.
 Treated Electric $\frac{1}{2}$ min. Clean
 " P-4 1 min

Wash in whirler, then rinse in
 distilled water, and dry in
 whirler.

Put in Ni bath dry
 Revolve 1 min no current.
 Then full current, on.

Washed and rinsed well before
 drying to put in Ni bath

7/70/10

Total Amps 70
 " hours 7
 Average amp 10

#1 Ni Bath

Start July 15, 20- PM

Time	Sp. Gr.	Volts	Amps	Temp	Total
3 PM	1.250	9.5	10	90	
4 -	1.250	9.5	11	90	11
5 -	1.280	9.5	10	93	21
6 -	1.280	9.5	10	100	31
7 -	1.280	9.5	10	100	41
8 -	1.280	9.5	10	105	51
9 -	1.250	9.5	9.5	103	60
10 -	1.280	9.5	9.5	103	70

Transfer to
 #2 Copper
 Bath July 15

hi face disc.
treated Electric Cleaner. 10 min.
" 8-4 1 minute

Rash in whirls, rinse in
distilled water.
Put in wet hi bath.
Revolve 1 minute no current,
Then full current on.

Washed and rinsed well, before
putting into hi bath.

7/84/12-

Total Amps 84
hours 7.
Average Amps 12.-

#2 hi Bath

Started July 15, 20 - P.M.

Time	Sp	Volts	Amps	Temp	Total
3 P.M.	1250	9.5	13.	90	
4-	1280	9.5	12	90	12
5-	1280	9.5	12	94	24
6-	1280	9.5	12	96	36
7-	1280	9.5	12	99	48
8-	1280	9.5	12	99	60
9-	1280	9.5	12	100	72
10	1280	9.5	12	112	84

Out

~~70-75~~

Transferred to
#8 Apparatus
July 15, 20.

✓

Put in dry
 Revolve 2 minutes
 Put full current on, after running
 30 minutes open circuit for
 20 minutes to let both run
 without current, then close
 circuit and let run 65 or
 more Amps

11.5) 116 (10. ✓

Total amp 116
 " hours 11 1/2
 Average amp 10. -

#1 in Bath
 Started July 15, 20 - at 10.55 PM.

Time	Volts	Amps	Temp	Total	Notes
11:35	1280	9.5	10.5	98	
11:35	1280	9.5	10.5	98	10
12:35	1280	9.5	10.5	98	21
1:35	1280	9.5	10.5	98	31
2:35	1280	9.5	10.5	97	42
3:35	1280	9.5	10	100	52
4:35	1280	9.5	9.5	100	62
5:35	1280	9.5	9.5	100	72
6:35	1280	9.5	9	98	82
7:35	1280	9.5	8.5	95	92
8:35	1270	9.5	10.	92	107
10:40	1270	9.5	9	92	116

Cut

Transfer to
 #2 Copper
 Bath

July 16, 20.
 Put in dry Cu
 full current and

$$11.5 \overline{) 137.25} \quad (11.9$$

$$\begin{array}{r} 220 \\ 110 \\ \hline 1058 \end{array}$$

Total Amps 137
 " hours 11 1/2
 Average Amps 11.9

#2 Hi Bath
Started July 15, 20- at 1038 P.M.

Time	Sp	Volt	Amp	Temp	Total
10:18	1280	91.5	11.5	9.5	1/2
11:18	1280	91.5	11.5	9.5	
12:26	1280	91.5	11.5	12.5	9.5
1:14	1280	91.5	11.5	9.5	
1:28	1280	91.5	11.5	9.5	
2:24	1280	91.5	11.5	9.5	12.5
3:18	1280	91.5	11.5	9.5	9.5
4:25	1280	91.5	11.5	10.0	5.8
5:18	1280	91.5	11.5		10.0
6:20	1280	91.5	11.5	9.5	
7:20	1280	91.5	11.5	12.0	12.0
8:26	1280	91.5	11.5	12.0	12.0
9:20	1280	91.5	12	92	125
10:20	1280	91.5	12	92	137
10:40	"	95			

Out
~~17.11.1951~~
Transfer to #
3 Copper bath
July 16, 20.
Spent in dry Cu
full correction on



2-ni faced females
Considerably rounded edges
Electro Clean 30 sec

8-4 - one Minute

Put in Ni Bath dry

Revolve 2 minutes, then put current on
Run to 7.5 Amps

105 | 105 | 10

Total Amps 105
" hours 10 1/2
Average Amps 10.

#1 Ni Bath

Started July 16, 20. @ 12 PM

Time	Spd	Volt	Amps	Temp	Total
12:20 AM	1270	9.5	9.5	95	
1:30	1270	9.5	10.	93	10
2:30	1270	9.5	10.	93	20
3:30	1270	9.5	10.	97	30
4:30	1270	9.5	10	97	40
5:30	1270	9.5	10	95	50
6:30	1275	9.5	10	96	60
7:30	1275	9.5	10	96	70
8:30	1275	9.5	10	98	80
9:30	1275	9.5	10	99	90
10:30	1275	9.5	10	99	100
11-	1275	9.5	10	99	105

Should blister
at 1:30 AM. 2 Rings

Note if any
knobs appear
on trees.

Out
Transfer to
#6 for post bath
July 16, 20.

Same as #1 Ni Bath
of July 14, 200 @ 12:30 AM

105 | 124 | 11.8
105 | 124 | 11.8
105 | 124 | 11.8
105 | 124 | 11.8

Total Amps 124
11 hours 10 1/2
Average Amps 11.8

#2 Ni Bath

Time	Sp No	Volt	Amps	Temp	Total	
12:30 AM	1270	9.5	12.5	95		12:30 AM
1:30	1270	9.5	12	92	12	
2:30	1270	9.5	12	98	24	
3:30	1270	9.5	11	95	35	
4:30	1270	9.5	12	95	47	
5:30	1270	9.5	11.5	97	58	
6:30	1275	9.5	12	97	70	
7:30	1275	9.5	12	98	82	
8:30	1275	9.5	12	97	94	
9:30	1275	9.5	12	97	106	
10:30	1275	9.5	12	98	118	
11-1	1275	9.5	12	99	124	

note when
any knots appear
or break

Cent

Roundet Edge Hiss
Put in dry 3 Minutes Revolve
then full current on

#1 - in Bath

Started Jan 16 20 at 11:30 AM

Time	Spd	Volts	Amps	Emp	Total
11:30 AM	1275	9.5	9.5	91	
12:30	1275	9.5	9	92	9
1:30 PM	1275	9.5	9.5	92	18
2:30	1275	9.5	9	90	27
3:30	1275	9.5	9	90	36
4:30	1275	9.5	9.5	90	45
5:30	1275	9.5	9.5	90	55
6:30	1275	9.5	9.5	92	64
7:30	1275	9.5	9	91	73
8:30	1275	9.5	9	93	82
9:30	1275	9.5	9	93	91
10:30	1275	9.5	9	94	100
11 AM	1275	9.5	9	94	105

Transferred to
#4 in Bath
July 17, 20.
105 amp
in Bath

Duplicate of #1 Ni Bath
 of July 16, 20, Oct 13³⁰ PM.

#2 Ni Bath

Started July 16, 20 ① 12³⁰ PM.

Time	Sp. Dr.	Volts	Amper.	Temp	Stel
11 ³⁰	1275	9.5	12	93	
12 ³⁰ PM	1275	9.5	11.5	92	12
		July 17, 20			
1 ³⁰ PM	1275	9.5	12	90	24
2 ³⁰	1275	9.5	12	90	36
3 ³⁰	1275	9.5	12	90	48
4 ³⁰	1275	9.5	12	92	60
5 ³⁰	1275	9.5	12	90	72
6 ³⁰	1275	9.5	11	90	83
7 ³⁰	1275	9.5	12	90	95
8 ³⁰	1275	9.5	12	92	107
9 ³⁰	1275	9.5	10.5	92	117
10 ³⁰	1275	9.5	10.5	92	128
11	1275	9.5	10.5	93	133

Transfer to
 #7 Copper
 Bath July 17, 20
 133 Amps Ni
 plated

Revolve 60 min. in Bath dry
then full current on.

16/98 / 9.8
Total Amp/hrs 98
" - hours 10
Average Amps 9.8

#1 Ni Bath
Started July 17 20 @ 12⁴⁵ P.M.

Time	Sp. No.	Voltage	Amps	Temp	Total
11:45					
12:45					
12:45 PM	1280	9.5	10	91	
1:45	1280	9.5	10.5	94	10.
2:45	1280	9.5	10.5	94	21
3:45	1280	9.5	10.5	94	31
4:45	1280	9.5	10.5	100	42
5:45	1280	9.5	10.	100	52
6:45	1280	9.5	10	100	62
7:45	1280	9.5	9	95	71
8:45	1280	9.5	9	95	80
9:45	1280	9.5	9	95	89
11:45	1280	9.5	9	95	98 Amp.

Out

after 10 min
Copper color
on Ni disc
no current

note: hot stoppage

Transferto
#2 Copper,
bath
98 Amps first
July 17 20
at 1:45 P.M.

Duplicate of #1 Bath
Except screen in #2 Bath

7/27/11

Total Amps 77
" hours 7
" hours 11

#2nd Bath
Started July 17, 20 @ 11:0 P.M.
Time Spent Volts Amps Temp Trial

1.40	12.80	9.5	11	90	
2.00	12.70	9.5	11	90	11
3.00	12.80	9.5	11	90	22
4.00	12.80	9.5	11	90	33
5.00	12.80	9.5	11	97	44
6.00	12.80	9.5	11	90	55
7.00	12.80	9.5	11	90	66
8.00	12.80	9.5	11	90	77

Out

after 10 min copper
solution in case
No Current

Note down stripped

Cracked on edge
of mould noticed
about 4.00 P.m.

Transfer to #8
Bath July 17-20
77 Amps



Rounded edge disc put in dry
3 minutes. Reverse then full
current on

1/2 minute in cleaning Bath
in 8-4
washed in firehant water
rinsed in distilled
put in dry then put
in nichel bath for 3 minutes
with current off

10/25/85
Total Amps 85
" hours 10
Average Amps 8.5

1 M Bath
started July 18-20

Time	Volts	Amps	Amps	Total
2:00	1280	9.5	9	89
3:00	1286	9.5	9	91
4:00	1280	9.5	9	93
5:00	1280	9.5	9	93
6:00	1280	9.5	8.5	94
7:00	1280	9.5	8.5	94
8:00	1280	9.5	8.5	93
9:00	1280	9.5	8.5	93
10:00	1280	9.5	8.5	93

Measured started
for Green to ca
2-30 AM.

Out Amp
stopped at
10:00 AM on
account of cracked
disc

LN G

Rounded edge Disc
Put in chpt 3 minutes Revolve
then full current on

same as No 1

10) 107 (10.7)

Total Amps = 107
" hours = 10
Average Amps = 10.7

No 2 Ni Bath
started July 18 20

Time	Volts	Amps	Amps	Notes
12:00	12.80	9.5	11.5	88
1:00	12.80	9.5	11	89
2:00	12.80	9.5	11	89
3:00	12.80	9.5	11	89
4:00	12.80	9.5	11	90
5:00	12.80	9.5	11	90
6:00	12.80	9.5	10.5	90
7:00	12.80	9.5	10.5	90
8:00	12.80	9.5	10.5	90
9:00	12.80	9.5	10.5	90
10:00	12.80	9.5	10.5	90

107 Amps
Out stopped on
account of being
cracked

M.E.

Revised edge line
Put in def 3 minutes reverse
then full current on.

Total Amp 78
" hours 8
Average Amps 9.6 Per hour

Ni Bath No 1

started July 18-20

AM	Lbs	Volta	Amp	Amp	Total
11	1280	9-5	10	94	
12	1280	9-5	10	96	10
1-40	1280	9-5	10	96	20
2	1280	9-5	10	96	30
3	1280	9-5	10	96	40
4	1280	9-5	10	96	50
5	1280	9-5	9-5	55	54
6	1280	9-5	9-5	96	64
7	1280	9-5	9-5	96	78

Out. 78 - Amp 8 hours

Transfer to No 5
Copper Bath
July 18-7-20 PM
In plate 48 Amps

Round edge disc
Put in 3rd B-minister south
then full current on

#2 Disc started to crack
at 1.00 PM. July 18
Taken Out at 2.30 Cracked on edge

Round Edge Disc

9) 97 / 10.7

Total Amps
11 hours
Average amps

#1 Ni Bath #2

started July 18 - 26

AM	Volts	Amps	Amps	Total
11	1280	9-5	92	
12	1280	9-5	94	9 X
PM 1.00	1280	9-5	10	94 19
2	1280	9-5	11	94 30
2.30	1280	9-5	11	94 35 Amps

Out Cracked on edge

M.C

AM	Volts	Amps	Amps	Total	One 2nd Disc
3.00	1280	9-5	11	54	
4.00	1280	9-5	11	94	
5	1280	9-5	11	95	11
6	1280	9-5	11	95	22
7	1280	9-5	11	95	33
8	1280	9-5	11	95	44
9	1280	9-5	11	95	55
10	1280	9-5	11	95	66
11	1280	9-5	11	95	76
12	1280	9-5	11	95	86

Transfer to
#6 Bath
July 18, 20.
12.45 AM
97 Amps 11.12.11

Round edge Disc put in
dry 3 minutes in water then
full current on

13 $\int \frac{127}{16.0} (9.8$

Total Amps 127
in hours 13
Average Amps 9.8

Pickel Bath 9121
started July-18-20-

Time	Volts	Amps	Watts	Total
8:00	1280	9.5	96	
9	1280	9.5	96	9
10	1280	9.5	96	18
11	1280	9.5	96	27
12	1280	9.5	96	36
AM July 19				
1:00	1280	9.5	96	45
2:00	1280	9.5	96	54
3:00	1280	9.5	96	63
4:00	1280	9.5	96	72
5:00	1280	9.5	96	81
6:00	1280	9.5	96	90
7:00	1280	9.5	96	99
8:00	1280	9.5	96	108
9	1280	9.5	96	117

Transferred to
#3 Copper
bath July 19 1920
10:45
127 Amps

Sharp Edge disc
Part in Hvy 3/4 minutes revolve
then full experiment on.

~~8~~ 9/102 / 11.3
9.2
30
Total Amps 102
" hours 9
Average Amps 11.3

Nickel Bath No 2
Started July 19-20

Time	SPGR	VOLTS	AMP	TEMP	TOTAL
1:00	1280	9.5	11.5	74	
2:00	1280	9.5	11.5	74	11
3:00	1280	9.5	11.5	74	23
4:00	1280	9.5	11.5	74	34
5:00	1280	9.5	11.5	74	46
6:00	1280	9.5	11.5	74	57
7:00	1280	9.5	11.5	74	68
8:00	1280	9.5	11.5	74	79
9:00	1280	9.5	11.5	74	91
10:00	1280	9.5	11	78	102
11:00	1280				

Ant

Transfer to
#4 Copper
bath July 1930
10 hrs
102 Amps

Start from July 19, 20.

11 am all disc to be

carried through marked as

M Bath #1 H when transferred to Copper bath

M #1 H

Copper #1 H-B

Should read ~~1 H-B~~

in
Started July 19, 20. 12:44 PM. Exper # 1-H.
#1 M Bath for new disc.
Revolve 2 min dry, then full current on.
Ran to 61 Amps, 5 hours.
Killed wash, rinse with still water & whirl dry.

Cu Exper. 1-A-B
#7 Bath
Only full current on.
New wood screen put in to replace
the linen one - Added 800 cc H₂SO₄ at
66° Baume 6 P.M. July 20, to copper bath.
Sppt Temp in copper should be dropped to
117° @ 80°

Removed trees after 494 Amps.

Total Amps 666
" hours 47
Average amps 15.7

ni.

Started July 19, 20 - 12 A.M.

Exp 2-A.

#2 Ni Bath. Corrosive disc.

Revolves 2 min/day, then full current on.

Low to 62 Amps .5 hrs.

At bath, wash, rinse distill water and dried.

Remarks

There was two slight, what may develop to be blisters, which appeared after 2 hours in nickel bath.



cu. #8 Bath

Exp 2-A.P.

Very full current on.

Added 800 cc H_2SO_4 at 66° Baumé

July 20, 20. at 6 P.M.

Held copper bath to 117° at 80°.

Removed trees after 572 Amps

Total Amps 648

" Hours 36

Average Amps 18.

iii.

Started July 19, 20, - 5³⁰ PM.

Epp #3-A.

#1 Ni Bath, Jones disc.

Revolve 2 min dry, then full current
disc, was finger marked before put
into Ni bath.

Ran to 65 amps Ni plates = 6 1/2 hours.

lv. #2 Bath.

Epp. 3-A-B

very full current on.
new wood screen put in to replace
the linen one which broke

Added 800 cc H_2SO_4 at 66° Baume

July 20, 20. at 6 PM.

Hold copper bath to 117° @ 80°.

Removed trees after 456 amps.

Total Amps 626

" hours 42

Average Amps 14.9

19
530 to 930 - 16 hr

44) $\frac{720}{41} = 17.5$
 $\frac{720}{41}$
 $\frac{367}{353}$
 $\frac{220}{133}$

M
 Started July 19, 20, 5:30 P.M. Effort #47A.
 #2 1/2 Bath. Concave disc.
 Revolve 2 min. dry then full current on.
 Low 181 Amps 16 hrs in plating. Hang up rack
 after usual wash, & distill water, then dried. 6 hrs



Low. # 6 Bath Effort #47B

Put in wet full current on.
 Added 800 cc H₂SO₄ @ 66° Baumé
 July 20, 20, at 6 P.M.
 Abolished soap for baths to 170° @ 80°

Total Amps = 720.
 " Hours = 41
 Average Amps = 17.5



45) 737 (16.3

in

Started July 19, 20-12 AM. Eggs 5 H.
#1 Ni. Bath Straight face side,
Revolve 2 min dry, then full current on
Ran to 90 Amps in 14 plated 9 hours.
Wash, wash, rinse distill water then dried and
hung on rack. no room in upper bath.
19 hours



Ch. 8 Bath.

Eggs 5 H-B.

Put in wet, full current on
Added 1000 cc H_2SO_4 to upper bath
at 12 AM July 22, 20.

Total Amps 737
" hours 45
Average Amps 16.3



M

Started July 20, 20 @ 10 AM. Exp 6 H.
Plate put in dry, reverse 2 min, then full current
forward disc.

Blisters appeared after M. plating 3 hours
at the extreme outer edge

Took out

Ran to 45 amperes in plate
4 hours plated.



Qu.

Exp 6. = 3

Was taken out of M. bath and
given to Mr. Edw. account of blisters.

~~Cut out~~

Ni

Started July 20, 20 - 10 AM. Exp 7.7
Put in bath, revolve 2 min, then full current
Conver disc, Taken out at bath, wash
rinse distill water, dry & put in rack.
Ran to 77 Amps Ni Plate, 7 hours

Hung in rack and put in Cu
bath after 24 hrs on rack

✓

Cu. Bath Exp 7.5

Put in wet, full current, as
added 1000 cc H_2SO_4 to Copper bath.
July 22, 20, at 12 AM. Ran to 677 Amps
39 hours Ni Plate

Total Amps 677
" hours 22 39
Average Amps 17.3

✓

July 20, 20.

Put all Ni in wet
1 Revolution through current Ni ,
Starting July 20, 20,
at 3 P.M. Orders from Mr. Eshwin

Also all copper in
wet

To be dried, then
wet distilled water.

July 20, 20, 6 P.M.
Added 800 cc H_2SO_4

at 66° Baume to the
Copper bath

Heated Sp. Gr. to 117° @ 80° C. Bath
from July 20, 20 at 6 P.M. till
further orders

$$\begin{array}{r}
 35 \overline{) 670} \\
 \underline{35} \\
 320 \\
 \underline{35} \\
 5
 \end{array}
 \quad \bigg| \quad 19.1$$

Ni
 Started July 20, 20 at 6 PM. Exp 8 H
 #1 Ni Bath
 Put in wet, put bottom then
 full current on
 Rm to 31 amper Ni plate, 3 hours

✓ Cont.

Cu Bath #4 Exp 8 H-B
 Put in wet, full current on
 Jars taken off with pliers at
 340 Amper Copper plate
 Hold Copper bath at 140, 1170
 at 80° FRR.

✓ Cont.

Total amper 670
 " hours 35
 Average Amper 19.1

$$\begin{array}{r}
 39 \overline{) 632} \quad 16.2 \\
 \underline{39} \\
 242 \\
 \underline{234} \\
 80
 \end{array}$$

Ni.

Started July 20, 20 @ 6 P.M. Exp 9 A.

#2 Ni Bath

Put in wet, put belt on, then full current on.

Ran to 30 amperes, 3 hours Ni plates

✓

Cu Bath #3

Exp 9 A.B.

Put in wet full current on

Removed knots with pliers at 55.64 hrs

added 1000 cc H₂SO₄ to Copper bath

July 22, 20, at 12 P.M.

Total amperes 632
 " hours 39
 Average Amps 16.2

✓

July 20, 20. at 12 AM. Epp 10 H.
#1 In bath
Put in wet, resolve 1 revolution,
then full current.
Raw to 27 Amps. shows in plate
Started to strip in bath 1 hr 15 minutes
after put in

Note stripped from disc with put in in

Cur # Bath

Epp 10 H

July 20, 20. at 12 PM. Exp 11A.

27 Bath

Put in dry, one revolution, then
full current on.

Ran to 30 Amps. shown in Plotter.

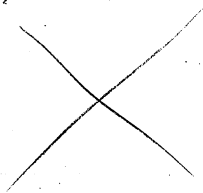
Showed signs of stripping. 1 hr 15 minutes
after put in.

Temp of # 10A

Note stripped from disc, not put in in

Cu # Bath

Cy 11A-B



in

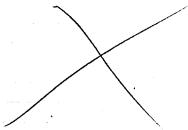
July 21, 20 at 10 AM Exp 12 A
#22 Put in wet, revolve once then full
current on. Run 3 hours in Place
Run to 7 Amps. — 1 hr in both.
Filed feather edge off disc.
few scratches showed to him in plate also
some blisters at outer edge
Wood filter put in both.

Temp of #10 A

Put out account of shipping

Has not put in Cu. Bath.

Exp 12 A-B

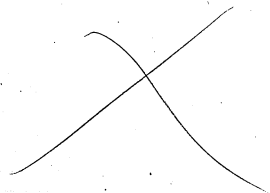


mi
July 21, 20. @ 10.11 AM. Exp # 137.
#2 Bath Put in wet, revolve piece, then
full current on. Run 3 hrs in bath.
Ran to 9.5 Amps - 1 hr in bath.
Filed feather edge off discs.
cracks started to show half hour after start in
plating.

Sup. of #10 B.
Has cut out account of stripping

Has not put in Cu. bath

Exp # 137 B



Take V_{in} reading & Temp.
14 A

Time	Sp. Dr.	Temp.	Volts	Amps	Total
12	1275	83	9.15	8	
12 ³⁰	"	84	"	8	8
				Out	

mi
~~July 21, 20~~ @ 12 AM. Eps 14 A
 10th. Put in wet, revolve once, then
 put full current on.
 Ran to 8 Amps. Ni Plated.
 Started to peel 1/2 hour after plated.

M.G.

Temp. of # 10 A

Take 1/2 hr reading on temp.
15 A.

Time	Sp. Gr.	Temp.	Voltage	Amper.	Total
12	1275	83	9.5	9.5	
1280	"	84	9.5	9.5	
Out					

July 21, 20. @ 12 A.M. Exp 15-A
#280 Put in wet, Revolve med, then
full current on.
Started to show blister spot 15 min after
put in bath.
Rm to 9.5 A/22. Lamp of 10 A.

N.G.
This was the 10th disc. tried
out with same results

Temp. before adding the
166°F Ni. Sol. = 88°F

EXP #	BATH	Sp	Gr	TEMP	VOLT	AMP	TOTAL	TIME
16A	1	1270	92	9.5	7			3
		1270	93	10	8.5	8		4
			95	10	9	17		5
			100	10	9	26		6

3 || 26 (8.2) *Out*
Total Amps 26
" hours 3
Average Amps 8.2

17A	2	1270	92	9.5	8	3
		1270	95	10	11.5	4
		"	95	10	11.5	5
		"	95	10	11.5	6

3 || 34 || 11.3

Out

mi
July 21, 20. at 3 PM. Exp 16A
#1 Bath.

Put in wet, one revolution then full
current on. Did not show any
sign of stripping. Ran to 26 Amps in 16 min.

Steel coil put around outside of
bath to keep temp constant.
Hold to 100-105° FAHR.
Voltage raised to 10.
was 9.5



July 21, 20. at 3 PM. Exp 17A.
#2 of 17A

Started to strip after 45 min
in Ni bath around edge

Ran to 34 Amps
3 hrs in plating



Total Amps 34
" hours 3
Average Amps 11.3



EXP #	BATH	SP	GR	TEMP	VOLT	AMP	TOTAL
18H	1	127	105	10	9	9	6 PM
	"	"	105	"	9	9	7
			105	"	9	18	8
			105	"	9	27	9
			105	"			
			104				

Total Amps
" hours
Average Amps

Out

19H	2	127	104	10	11.5	6
			105	"	11.5	12
			106	"	11	22
			104	"	11	8
			103	"	11	83
			103	"	11	9
			102			

Total Amps
" hours
Average Amps

Out

July 21, 20 @ 6 PM
Run 3 hrs in Plate.
Put in wet, one revolution then full
current on.



Exp: 19H
Run 3 hrs in Plate
Duplicate of # 18 H
Added 10000 H to 20000 H
July 22, 20, at 12 PM



EXP.	BATH	SP. GR.	TEMP.	VOLT.	AMP.	TOTAL	TIME
20H	1	1270	104 1700 160 162 162 162 162 162	10	40	10	9 PM
				"	10	10	
				"	10	20	11
				"	10	30	12
Out							

Total Amps 30
" 5 hrs
Average Amps 10

Q. 1. A.	Q.	1270	TEMP.	VOLT.	AMP.	TOTAL	TIME
			100 150 111 111 100 100 100 100	10	11-5	9	
				"	11-5	12	10
				"	11-5	23	11
				"	11-5	35	12
Out							

Total Amps 35
" 5 hrs
Average Amps 11.5

3) 5.5
11.5

July 21, 20. @ 9 PM. Eff 20H
Put in wet, revolve piece, then
full current on

✓

Eff 21H.

Duplicate of #20H.

✓

EXP	BATH	Sp Gr	Temp	VOLT	AMP.	TOTAL	Time-AM
22 A	1	1270	123	16	9.5		12
			100		9.5	9	1
			100		9.5	19	2
			61		9.5	28	3
			100			Out	
Total Amps 28 " hours 3 Average Amps 9.5							
23 A	2	1270	100	10	11.5		Time
			99		11.5	12	12 RM
			100		11.5	23	2
			102		11.5	35	3
			101			Out	
Total Amps 35 " hours 3 Average Amps 11.5							

July 22, 20 July 21, 20 at pm. Exp 22
 Put in and out some more
 than current on

Exp 23 A
 Duplicate of #22 A

EXP #	BATH	Sp. G.	TEMP	VOLT.	AMP.	TOTAL
4 PM	1	1260	110	9.5	11.5	11
5	"	"	"	"	11.5	2.3
6	"	"	115	"	11.5	3.4
7	"	"	118	"	11.5	4.6
8	"	"	"	"	11.5	5.7
9	"	"	"	"	11.5	6.9
10	"	"	"	"	11.5	8.0
11	"	1265	"	"	11.5	9.2
12	"	"	"	"	"	"
July 3, 1941	1, 20	"	"	"	"	"
1 AM	"	1260	"	10.0	10.2	10.2
EXP #	#2	1260	118	9.5	13	13
7 PM	"	"	"	"	13	26
8	"	"	"	"	13	39
9	"	"	"	"	13	52
10	"	"	"	"	13	65
11	1265	"	"	"	13	78
12	"	"	"	"	"	"
July 3, 1941	"	"	"	"	13	91
2	"	"	"	"	13	104
8/104/13						Out

Memo.

Started July 30, 20 at 4 PM. Exp 24 H.

#1 Bath

Ran 4 hrs faced circuit female Moore's handil
15 seconds in sleeping bath ^{could not avoid from}
15 " " 8 1/4 Plate in 100 Amps put in set ^{handil's feet not in place}
current off, after 1 revolution put subject on
Sned Alka Rubber, Copper put in wet
current on, strips and put back
15 seconds cleaner - 15 seconds 6 1/4 and
keep on as many times as you saw.

Total Amps 102
Average Amps 11.5

Started July 30, 20 at 6 PM. Exp 25 H.

#2 Bath

1 duplicate of Exp #24 H

Total Amps 104

" hours 8

Average Amps 13

Out

Epp 26# Bath #1

Temp of Epp #24 H. Except
Molds given preliminary
brushing before going into
electric element.

10/103/10

Epp 27# Bath #2

Temp of Epp #24 H
Same treatment as above

1120

July 31, 9 AM

Exp 26# Bath	Time	Sp. Gr	Temp	Volt	Amp	Total	
	9 AM	1.250	98	9.5	9		
	10	"	102	"	9.5	9	
	11	"	108	"	10.	19	
	12	"	115	"	10.5	30	
	1	"	115	"	10.5	40	
	2	"	"	9.5	10.5	51	
	3	"	107	"	14.1	61	
	4	"	"	"	14.5	72	
	5	"	"	"	10.5	82	
	6	"	"	"	11.5	95	
	7	"	"	"	11.5	103	
							Total Amps 120 " hours 10 Average Amp 10
							Out
Exp 27# Bath	Time	Sp. Gr	Temp	Volt	Amp	Total	
	9 AM	1.260	110	9.6	12.5		
	10	"	103	"	11.0	11	
	11	"	108	"	12.0	23	
	12	"	113	"	12.5	35	
	1	"	115	"	12.5	48	
	2	"	"	"	12	60	
	3	"	"	"	12	72	
	4	"	100	"	12	84	
	5	"	"	"	12	96	
	6	"	"	"	12	108	
	7	"	"	"	12	120	
							Total Amps 120 " hours 10 Average Amp 12
							Out

2 small
blister
developed
at 2 PM.

Exp 28# 15 second in cleaner then

15" 8/4
then strips and
put back

1 stripping
#1 Bath

#1 Ni Bath. Ni Exp 28H

#1 Ni Bath started

TIME	BATH	SP. GR.	TEMP.	VOLT	AMP	TOTAL	
7		1.70	90	9	9		
8					9		
9					9		
10					9		
11			93		9		
12		1.75	104	9.5	10	43	1st stripping
1					10	20	
2					10	30	
3					10	40	
4					9.5	44	
5					9	58	
6					9	67	
7					9	76	
8					9	85	
9		10.5			8.5	94	
10							
10:30	1.760	100	95	10			3rd time
11:30	"	"	"	10			
12:30	"	"	"	10			
1:30	"	"	"	10			
2:30	"	"	"	10			
					50		out for 2nd strip

Aug 1, 30

1st stripping

Aug 1, 30

out 2nd strip

3rd time

Aug 2, 30

out for

2nd strip

#1 Bath in

Exp 25 #

Exp	Time	Sp. Gr	Temp	Volt	Amper	Total
Aug 20	4:30	1068	103	9.5	10	
	5:30	"	"	"	10	10
	6:30	"	107	"	10	20
	7:30	"	107	"	8	38
	8:30	"	"	"	8	46

4th
stripping
out

Exp	Time	Sp. Gr	Temp	Volt	Amper	Total
Aug 20	12:00	1270	1			
	1:30	1290	9.5	9.5	10	
	2:30	"	"	9.5	10	10
	3:30	"	100	"	10	20
	4:30	"	"	"	10	30
Aug 3	5:30	"	102	"	10	40
	6:30	"	"	"	10	50
	7:30	"	"	"	10.5	60
	8:30	"	"	"	10.5	71
	9:30	"	105	"	10.5	81

no 2nd bath
5th
stripping

Exp	Time	Sp. Gr	Temp	Volt	Amper	Total
Aug 3	10:00	1275	103	9.5	9	9
	11	"	"	"	9	18
	12	1270	104	"	9	27
	1	"	"	"	9	36
	2	"	"	"	8	44

out
6th
stripping
out

#1 Bath ni							Epl 25th	
TIME	Depth	Dir	Wind	Cloud	Temp	Bar	7th	
3 PM	1470	106	9.5	100			Shipping	
4	"	"	"	10	10			
5	"	"	"	10	20			
6	"	107-9	10	10	30			
7	"	106	8.5	10	40			
							Out	
Aug 3	8 30	170	10.5	10	10		8th	
	9 30	"	"	"	10	20	Shipping	
	10 30	"	"	"	10	30		
	11 30	"	"	"				
	12	"	"	"			Out	
Aug 4	1 AM	270	10.3	9.5	9		9th Shipping	
	2	"	10.3	11	8.5	8		
	3	"	"	"	8.5	16		
	4	"	"	"	8.5	25		
	5	"	"	"	8.5	33		
	6	"	10.5	"	8.5	42		
	7	"	"	"	8.5	50	9th	
	8	"	"	"	8.5	69		
Aug 4	10	1070	10.3	9	9		10th Shipping	
	11	"	"	"	9	9		
	12	"	10.5	"	9	18		
	1	"	"	"	9	27		
							Out	

Copper Baths

Aug 4, 20 } added 100cc
general Bath dope

Aug 5, 20 } added 20cc
dose general
bath dope

#1 Bath in

Eyl 28th

Date	TIME	Sp	gn	Jump	Volt	Ampl	Total	num	s/y
Aug 4	3 PM	1250	108	9.5	10	10	20	11th	
	4	"	"	"	"	10	30	stripping	
	5	"	105	"	"	10	40	Out	
	6	"	"	"	"	10	50	Out	
	7	"	"	"	"	10	12th		
Aug 4	7:30 PM	1260	108	9.5	10	10	26	stripping	
	8:30	"	"	"	"	10	10		
	9:30	"	"	"	"	10	40	Out	
	11:30	"	"	"	"	10	13th	stripping	
Aug 4	12	1260	104	9.5	10	9	17	26	Out
Aug 5	1	"	"	"	9.5	8	14th	stripping	
	2	"	"	"	8.5	17	26	Out	
	3	"	"	"	8.5	24	14th	stripping	
	4	"	"	"	8.5	34	Out		
Aug 5	4:30	1260	102	9.5	8	8	14th	stripping	
	5:30	"	106	"	8.5	17	26	Out	
	6:30	"	"	"	8.5	24	14th	stripping	
	7:30	"	"	"	8.5	34	Out		
	8:30	"	"	"	9	34	Out		
Aug 5	9:30 PM	1270	100	9.	9.	9	18	27	Out
	10:30	"	"	"	9.	9	27	Out	
	11:30	"	102	"	9.	9	27	Out	
	12:30	"	105	"	9.	9	27	Out	
	1:30 PM	"	"	"	9	9	27	Out	

#1 Bath

Egg 2877

EXP	TIME	Sp. g.	Temp	Volt	amp	Feet	Notes
Aug 5	2.15	1280	108	9.5	9.5	19	17th stripping
	3.15	1280	108	9.0	9.5	19	
	4.15	1280	108	9.0	10	30	
	5.15	"	"	"	10.5	30	
	6.15	"	"	"	10.5	41	
Aug 5	7.15	1280	106	9.5	10	10	17th stripping
	8.15	"	"	"	10	10	
	9.15	"	"	"	10	22	
	10.15	"	"	"	10	37	
	11.15	"	"	"	10	42	
Aug 5	12.15	1280	106	9.5	10	10	17th stripping
	13.15	"	105	"	10	20	
	14.15	"	"	"	10	30	
	15.15	"	"	"	10	40	
	16.15	"	"	"	10	40	
Aug 6	17.15	1280	106	9.5	10	10	18th stripping
	18.15	"	"	"	10	10	
	19.15	"	"	"	10	20	
	20.15	"	"	"	10	30	
	21.15	"	"	"	10	46	

Stopped fifteen min: to fix pump

#2 Bats

Exp 297

Exp 297	Time	Start	Temp	Vote	Ampl	Total	
	7	170	90	9	8		
	8				8		
	9				9		
	10		93		9		
	11		"		10	44	Aug 120, not shipping
	1130	175	109	95	10		
	1220				10	20	
	130				10	30	
	230				10	40	
	330				9.5	49	
	430				9	58	
	530				9	67	Aug 120
	630				9	76	
	730				9	85	
	830		105		8.5	94	Est 2nd stage
	930		"				
	1030	126	102	95	11.5		
	1130	"	"	"	11.5		Aug 3
	1230	"	104	"	11.0		
	130	"	107	"	11.0		
	730	"	107	"	11	56	not shipping

#2 Bath ni

Exp #297

FIP

	TIME	S. g.	Temp	Vets	Am.	Total	
	4:30	176	103	9.5	11.5		
	5:30	"	"	"	11.5	11	4 th stripping
	6:30	"	"	"	11.5	23	Aug 20
	7:30	"	"	"	1%	35	6 th Out
Aug 2	11:30	1280	96	9.5	8		
	12:30	"	"	"	8	16	
Aug 3	1:30 AM	"	100	"	8	24	5 th stripping
	2:30	"	"	"	8	32	
	3:30	"	"	"	8	40	
	4:30	"	"	"	8	48	
	5:30	102	"	8	56		
	6:30	"	105	8	64		
	7:30	"	"	8	72		Out
Aug 3	10 AM	1275	105	9.5	10.5		6 th
	11	"	"	"	11.5	11	"
	12	1270	104	"	11.5	22	Stripping
	1 PM	"	"	"	10.5	34	
	2 "	"	"	"	10.5	45	Out
Aug 20	3	1270	107	9.5	11		7 th stripping
	4	"	"	"	11	11	
	5	"	"	9	10	21	
	6	"	108	"	10	31	
	7	"	107	10.5	10	41	Out

Aug. 4, 20 at 1 PM,
 8-4
 added more to
 fetch per per strength

#2 Bathni

							Eggs 29A
Exp	Time	Sp. H. Time	Wt. H. Time	Wt. H. Time	Wt. H. Time	Wt. H. Time	g. stripping
Aug 3	8:30	1070	106	100	11	11	g. stripping
	9:30	"	"	"	11	11	
	10:30	"	"	"	11	11	
	11:30	"	"	"	11	11	
	12:30	"	"	"	11	11	
Aug 4	1 PM	1270	104	9.5	11	11	Cart
	2	"	105	"	10.5	10	g. stripping
	3	"	"	"	10.5	10	
	4	"	"	"	10.5	10	
	5	"	"	"	10.5	10	
	6	"	"	"	10	10	
	7	"	106	"	10	10	
	8	"	"	"	10	10	
Aug 4	10 AM	1270	104	9	10	10	Cart
	11	"	"	"	10	10	g. stripping
	12	"	105	"	10	10	
	1	"	"	"	10	10	
	2	"	"	"	10	10	
Aug 4	3	1270	104	9.5	11	11	Cart
	4	"	"	"	11	11	g. stripping
	5	"	106	"	11	11	
	6	"	"	"	10	10	
	7	"	"	"	10	10	
1 PM Aug 4	10:55	Added 8-4 to per strength					

#2 Bath in

Egg 29H

Aug 4	TIME	Sp. No	Temp	Vol	Comp	Stat
	7:30 AM	1760	108	9.5	11	12 th
	8:20	1760	"	"	11	Stripping
	9:20	"	"	"	11	
	10:30	"	"	"	11	
	11:30	"	"	"	11	46

Aug 5	TIME	Sp. No	Temp	Vol	Comp	Stat
	12	1260	105	9.5	10.5	13 th
	1 PM	"	"	"	10	10 Stripping
	2	"	"	"	10	20
	3	"	"	"	10	30
	4	"	"	"	10	40 Out
	5					
	6					

Aug 5	TIME	Sp. No	Temp	Vol	Comp	Stat
	4:30	1260	103	9.5	10	74 Out
	5:30	"	104	"	9.5	7 Stripping
	6:30	"	"	"	9.5	17
	7:30	"	"	"	9.5	28
	8:30	"	"	"	9	29 Out

Aug 5	TIME	Sp. No	Temp	Vol	Comp	Stat
	9:30 AM	1270	102	9	9	15 th
	10:30	"	103	"	9.5	9
	11:30	"	104	"	9.5	17 Stripping
	12:30	"	107	9.5	28	
	1:30 PM	"	107	9	9.5	38 Out

20.00 Added double dose pen. bath drops

2 Bath, W.

Ex 29A

EXP#	TIME	3/9	3/10	3/11	3/12	3/13	3/14	3/15	3/16	3/17	3/18	3/19	3/20	3/21	3/22	3/23	3/24	3/25	3/26	3/27	3/28	3/29	3/30	3/31	3/32	3/33	3/34	3/35	3/36	3/37	3/38	3/39	3/40	3/41	3/42	3/43	3/44	3/45	3/46	3/47	3/48	3/49	3/50	3/51	3/52	3/53	3/54	3/55	3/56	3/57	3/58	3/59	3/60	3/61	3/62	3/63	3/64	3/65	3/66	3/67	3/68	3/69	3/70	3/71	3/72	3/73	3/74	3/75	3/76	3/77	3/78	3/79	3/80	3/81	3/82	3/83	3/84	3/85	3/86	3/87	3/88	3/89	3/90	3/91	3/92	3/93	3/94	3/95	3/96	3/97	3/98	3/99	3/100	3/101	3/102	3/103	3/104	3/105	3/106	3/107	3/108	3/109	3/110	3/111	3/112	3/113	3/114	3/115	3/116	3/117	3/118	3/119	3/120	3/121	3/122	3/123	3/124	3/125	3/126	3/127	3/128	3/129	3/130	3/131	3/132	3/133	3/134	3/135	3/136	3/137	3/138	3/139	3/140	3/141	3/142	3/143	3/144	3/145	3/146	3/147	3/148	3/149	3/150	3/151	3/152	3/153	3/154	3/155	3/156	3/157	3/158	3/159	3/160	3/161	3/162	3/163	3/164	3/165	3/166	3/167	3/168	3/169	3/170	3/171	3/172	3/173	3/174	3/175	3/176	3/177	3/178	3/179	3/180	3/181	3/182	3/183	3/184	3/185	3/186	3/187	3/188	3/189	3/190	3/191	3/192	3/193	3/194	3/195	3/196	3/197	3/198	3/199	3/200	3/201	3/202	3/203	3/204	3/205	3/206	3/207	3/208	3/209	3/210	3/211	3/212	3/213	3/214	3/215	3/216	3/217	3/218	3/219	3/220	3/221	3/222	3/223	3/224	3/225	3/226	3/227	3/228	3/229	3/230	3/231	3/232	3/233	3/234	3/235	3/236	3/237	3/238	3/239	3/240	3/241	3/242	3/243	3/244	3/245	3/246	3/247	3/248	3/249	3/250	3/251	3/252	3/253	3/254	3/255	3/256	3/257	3/258	3/259	3/260	3/261	3/262	3/263	3/264	3/265	3/266	3/267	3/268	3/269	3/270	3/271	3/272	3/273	3/274	3/275	3/276	3/277	3/278	3/279	3/280	3/281	3/282	3/283	3/284	3/285	3/286	3/287	3/288	3/289	3/290	3/291	3/292	3/293	3/294	3/295	3/296	3/297	3/298	3/299	3/300	3/301	3/302	3/303	3/304	3/305	3/306	3/307	3/308	3/309	3/310	3/311	3/312	3/313	3/314	3/315	3/316	3/317	3/318	3/319	3/320	3/321	3/322	3/323	3/324	3/325	3/326	3/327	3/328	3/329	3/330	3/331	3/332	3/333	3/334	3/335	3/336	3/337	3/338	3/339	3/340	3/341	3/342	3/343	3/344	3/345	3/346	3/347	3/348	3/349	3/350	3/351	3/352	3/353	3/354	3/355	3/356	3/357	3/358	3/359	3/360	3/361	3/362	3/363	3/364	3/365	3/366	3/367	3/368	3/369	3/370	3/371	3/372	3/373	3/374	3/375	3/376	3/377	3/378	3/379	3/380	3/381	3/382	3/383	3/384	3/385	3/386	3/387	3/388	3/389	3/390	3/391	3/392	3/393	3/394	3/395	3/396	3/397	3/398	3/399	3/400	3/401	3/402	3/403	3/404	3/405	3/406	3/407	3/408	3/409	3/410	3/411	3/412	3/413	3/414	3/415	3/416	3/417	3/418	3/419	3/420	3/421	3/422	3/423	3/424	3/425	3/426	3/427	3/428	3/429	3/430	3/431	3/432	3/433	3/434	3/435	3/436	3/437	3/438	3/439	3/440	3/441	3/442	3/443	3/444	3/445	3/446	3/447	3/448	3/449	3/450	3/451	3/452	3/453	3/454	3/455	3/456	3/457	3/458	3/459	3/460	3/461	3/462	3/463	3/464	3/465	3/466	3/467	3/468	3/469	3/470	3/471	3/472	3/473	3/474	3/475	3/476	3/477	3/478	3/479	3/480	3/481	3/482	3/483	3/484	3/485	3/486	3/487	3/488	3/489	3/490	3/491	3/492	3/493	3/494	3/495	3/496	3/497	3/498	3/499	3/500	3/501	3/502	3/503	3/504	3/505	3/506	3/507	3/508	3/509	3/510	3/511	3/512	3/513	3/514	3/515	3/516	3/517	3/518	3/519	3/520	3/521	3/522	3/523	3/524	3/525	3/526	3/527	3/528	3/529	3/530	3/531	3/532	3/533	3/534	3/535	3/536	3/537	3/538	3/539	3/540	3/541	3/542	3/543	3/544	3/545	3/546	3/547	3/548	3/549	3/550	3/551	3/552	3/553	3/554	3/555	3/556	3/557	3/558	3/559	3/560	3/561	3/562	3/563	3/564	3/565	3/566	3/567	3/568	3/569	3/570	3/571	3/572	3/573	3/574	3/575	3/576	3/577	3/578	3/579	3/580	3/581	3/582	3/583	3/584	3/585	3/586	3/587	3/588	3/589	3/590	3/591	3/592	3/593	3/594	3/595	3/596	3/597	3/598	3/599	3/600	3/601	3/602	3/603	3/604	3/605	3/606	3/607	3/608	3/609	3/610	3/611	3/612	3/613	3/614	3/615	3/616	3/617	3/618	3/619	3/620	3/621	3/622	3/623	3/624	3/625	3/626	3/627	3/628	3/629	3/630	3/631	3/632	3/633	3/634	3/635	3/636	3/637	3/638	3/639	3/640	3/641	3/642	3/643	3/644	3/645	3/646	3/647	3/648	3/649	3/650	3/651	3/652	3/653	3/654	3/655	3/656	3/657	3/658	3/659	3/660	3/661	3/662	3/663	3/664	3/665	3/666	3/667	3/668	3/669	3/670	3/671	3/672	3/673	3/674	3/675	3/676	3/677	3/678	3/679	3/680	3/681	3/682	3/683	3/684	3/685	3/686	3/687	3/688	3/689	3/690	3/691	3/692	3/693	3/694	3/695	3/696	3/697	3/698	3/699	3/700	3/701	3/702	3/703	3/704	3/705	3/706	3/707	3/708	3/709	3/710	3/711	3/712	3/713	3/714	3/715	3/716	3/717	3/718	3/719	3/720	3/721	3/722	3/723	3/724	3/725	3/726	3/727	3/728	3/729	3/730	3/731	3/732	3/733	3/734	3/735	3/736	3/737	3/738	3/739	3/740	3/741	3/742	3/743	3/744	3/745	3/746	3/747	3/748	3/749	3/750	3/751	3/752	3/753	3/754	3/755	3/756	3/757	3/758	3/759	3/760	3/761	3/762	3/763	3/764	3/765	3/766	3/767	3/768	3/769	3/770	3/771	3/772	3/773	3/774	3/775	3/776	3/777	3/778	3/779	3/780	3/781	3/782	3/783	3/784	3/785	3/786	3/787	3/788	3/789	3/790	3/791	3/792	3/793	3/794	3/795	3/796	3/797	3/798	3/799	3/800	3/801	3/802	3/803	3/804	3/805	3/806	3/807	3/808	3/809	3/810	3/811	3/812	3/813	3/814	3/815	3/816	3/817	3/818	3/819	3/820	3/821	3/822	3/823	3/824	3/825	3/826	3/827	3/828	3/829	3/830	3/831	3/832	3/833	3/834	3/835	3/836	3/837	3/838	3/839	3/840	3/841	3/842	3/843	3/844	3/845	3/846	3/847	3/848	3/849	3/850	3/851	3/852	3/853	3/854	3/855	3/856	3/857	3/858	3/859	3/860	3/861	3/862	3/863	3/864	3/865	3/866	3/867	3/868	3/869	3/870	3/871	3/872	3/873	3/874	3/875	3/876	3/877	3/878	3/879	3/880	3/881	3/882	3/883	3/884	3/885	3/886	3/887	3/888	3/889	3/890	3/891	3/892	3/893	3/894	3/895	3/896	3/897	3/898	3/899	3/900	3/901	3/902	3/903	3/904	3/905	3/906	3/907	3/908	3/909	3/910	3/911	3/912	3/913	3/914	3/915	3/916	3/917	3/918	3/919	3/920	3/921	3/922	3/923	3/924	3/925	3/926	3/927	3/928	3/929	3/930	3/931	3/932	3/933	3/934	3/935	3/936	3/937	3/938	3/939	3/940	3/941	3/942	3/943	3/944	3/945	3/946	3/947	3/948	3/949	3/950	3/951	3/952	3/953	3/954	3/955	3/956	3/957	3/958	3/959	3/960	3/961	3/962	3/963	3/964	3/965	3/966	3/967	3/968	3/969	3/970	3/971	3/972	3/973	3/974	3/975	3/976	3/977	3/978	3/979	3/980	3/981	3/982	3/983	3/984	3/985	3/986	3/987	3/988	3/989	3/990	3/991	3/992	3/993	3/994	3/995	3/996	3/997	3/998	3/999	3/1000
EXP#5	2:15	3/9	3/10	3/11	3/12	3/13	3/14	3/15	3/16	3/17	3/18	3/19	3/20	3/21	3/22	3/23	3/24	3/25	3/26	3/27	3/28	3/29	3/30	3/31	3/32	3/33	3/34	3/35	3/36	3/37	3/38	3/39	3/40	3/41	3/42	3/43	3/44	3/45	3/46	3/47	3/48	3/49	3/50	3/51	3/52	3/53	3/54	3/55	3/56	3/57	3/58	3/59	3/60	3/61	3/62	3/63	3/64	3/65	3/66	3/67	3/68	3/69	3/70	3/71	3/72	3/73	3/74	3/75	3/76	3/77	3/78	3/79	3/80	3/81	3/82	3/83	3/84	3/85	3/86	3/87	3/88	3/89	3/90	3/91	3/92	3/93	3/94	3/95	3/96	3/97	3/98	3/99	3/100	3/101	3/102	3/103	3/104	3/105	3/106	3/107	3/108	3/109	3/110	3/111	3/112	3/113	3/114	3/115	3/116	3/117	3/118	3/119	3/120	3/121	3/122	3/123	3/124	3/125	3/126	3/127	3/128	3/129	3/130	3/131	3/132	3/133	3/134	3/135	3/136	3/137	3/138	3/139	3/140	3/141	3/142	3/143	3/144	3/145	3/146	3/147	3/148	3/149	3/150	3/151	3/152	3/153																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

3 Bath. Cu Exp 30 P.

Exp	Time	Sy g	Imp	Volts	Amp	Total	
	4 PM	1170	80	9.5	18	18	1st time in
	5	"	84	8.5	18	18	Aug. 3, 20.
	6	"	"	"	18.5	36	
	7	"	"	"	19	55	
	8	"	"	"	19	74	Out

Aug 6	9 AM	1265	100	9.5	9		#1 Bath
	10	"	"	"	9	9	19th
	11	"	102	"	9	18	stripping
	12	"	"	9-	9	27	
	1 PM	"	"	9-	9	36	

Aug 6, 20	12 PM	1265	105	"	9		#1 Bath
	230	1270	107	"	9	9	in
	330	"	"	"	9	18	
	430	"	"	"	9	27	20th
	530	"	"	"	9	36	stripping

Aug 6, 20	7 PM	1270	109	"	9.5		#1 Bath
	8	"	"	"	9.5	9.5	in
	9	"	"	"	9.5	19	
	10	"	"	"	9.5	28	
	11	"	"	"	9.5	38	21 stripping

4 Bath. Cu. Exp 31B

TIME	Temp	Volts	Amps	Total	1st min in
4 PM	170	80	9.5	15	Aug. 3.20.
5	"	84	8.8	15	
6	"	"	"	15.5	
7	"	"	"	16	
8	"	"	"	16	

1st min in
Aug. 3.20.

Out

Aug 6, 9 AM	1265	101	9.5	9	#2 Bath
10	"	"	"	9	19th
11	"	103	"	18	Shipping
12	"	102	9-	27	
1 PM	"	"	9-	36	

Out

Aug 6, 1:30 PM					#2 Bath
2:30					20th
3:30					Shipping
4:30					
5:30					Out

Out

Aug 6, 6:30 AM	1770	107	9-	10	#2 Bath
7:30	1770	"	"	10	Shipping
8:30	"	"	"	20	#2
9:30	"	"	"	30	
10:30	"	"	"	40	Out

Out

5 Butte Cu Exp # 32 B.

Exp.

Time	Temp	Wind	Dir	1st time in
4 PM	170	90	17	Aug 3, 20.
5	"	84	17.5	17
6	"	"	18	35
7	"	"	18	53
8	"	"	18	71

Cont

6 Bath Cu Eps 33 B

4 PM	170	80	9.5	16	not there in
5	"	84	8.5	16.5	16 Aug. 3, 20.
6	"	"	"	16.5	33
7	"	"	"	17	50
8	"	"	"	17	67 Cent

7 Bath

Egg 34 B

DATE	TIME	Sp. gr.	Temp	Voltage	Comp.	Total	
Exp	4 PM	1170	83	9.5	15		
	5	"	84	8.5	16.5	16	1st time in
	6	"	"	"	16.5	33	Aug. 3, 20.
	7	"	"	"	16.5	49	
	8	"	"	"	16.5	66	Out

#1 Bath Nickel Plate

DATE Aug 6

Exp	Time	Temp	Volts	Amp	Total	#1 Bath
	12:00	127°	10.7	9.5	10	Nickel
Aug 7	1:00	"	"	"	10	2.1 stripping
	2:00	"	"	"	10	2.0
	3:00	"	"	"	9	2.9
	4:00	"	"	"	9	3.8
						Cut
Aug 7	Time	Temp	Volts	Amp	Total	#1 Bath
	4:30	127°	10.7	9.5	10	2.1 stripping
	5:30	"	"	"	10	2.0
	6:30	"	"	"	10	2.0
	7:30	"	"	"	10	3.0
	8:30	"	"	"	10	4.0
						Cut
Aug 7	8:30	127°	10.5	9.5	9	Bath #1
	9:30	"	"	"	9	3.2
	10:30	"	"	"	18	stripping
	11:30	"	"	"	17	
	12:30	"	"	"	9	36
						Cut
Aug 7	1:30	127°	10.3	9.5	10	Nickel
	2:30	"	"	"	10	2.1
	3:30	"	10.5	"	10	2.0
	4:30	"	"	"	10	3.0
	5:30	"	10.8	"		Cut

#2 Bath in Plate

DATE Aug 6

EXP	TIME	Temp	Temp	Volt	amp	Total	#2 Bath
	1200	1270	107	9.5	11	10	Nickel
aug 7	1,00	"	"	"	10	10	Ward Stopping
	2,00	"	"	"	10	20	
	3,00	"	"	"	10	30	
	4,00	"	"	"	10	40	Out
	TIME	Temp	Temp	Volt	amp	Total	#2 Bath
aug 7	4,30	1285	110	9.5	11	11	Ward Stopping
	5,30	"	"	"	11	11	
	6,30	"	"	"	10	21	
	7,30	"	"	"	10	31	
	8,30	"	"	"	10	41	Out
Aug 7	9,30	127	104	9.5	11	11	Ward Stopping
	10,30	"	"	"	10	20	
	11,30	"	"	"	10	30	
	12,30	"	"	"	10	40	Out
	1,30	1270	105	9.5	11	11	Ward Stopping
	2,30	"	"	"	11	21	
	3,30	"	"	"	10	31	
	4,30	"	"	"	10	41	Out
	5,30	"	"	"	10	51	
	6,30	"	"	"	10	61	
	7,30	"	"	"	10	71	
	8,30	"	"	"	10	81	Out

#2 Bath Ni Plate

DATE	Time	Temp	Volts	Amps	
Aug 7	11:30	127.0	11.0	9.5	11
	12:00	"	"	"	16
	1:30	"	"	"	10
	2:00	"	"	"	10
	3:30	"	"	"	10
Aug 8	4	127.0	11.1	9.5	18
	5	"	"	"	10
	6	"	"	"	10
	7	"	"	"	10
	8	"	"	"	10
Aug 8	9	127.0	11.0	9.5	28
	10	125.5	11.0	8.5	9
	11	125.5	11.0	8.0	17
	12	"	"	"	25
	1	"	"	"	32
Aug 9	2:40	126.0	10.7	8	9
	3:45	"	"	"	18.8
	4:45	"	"	"	27
	5:45	126.0	11.0	9.5	36
	6	"	11.3	9	

#1 Bath Ni Plate

DATE	Time	Temp	Volts	Amps		#1 Bath
Aug 7	6:00 PM	128.0	10.8	9.5	10	25 stripping
	7	"	"	"	10	
	8	"	"	"	10	
	9	"	"	"	10	
	10	"	"	"	11	
Aug 7	11:30	127.5	10.7	9.5	10	#1 Bath
	12:30	"	"	"	10	25 stripping
	1:00 PM	"	"	"	10	
	2:30	"	"	"	10	
	3:30	"	"	"	10	
Aug 8	4	127.0	10.5	9.5	10	#1 Bath
	5	"	"	"	10	27 strip
	6	"	"	"	10	
	7	"	"	"	10	
	8	"	"	"	10	
Aug 8	9	127.0	10.5	8.5	10	#1 Bath
	10	125.5	11.0	8	9	28
	11	125.5	11.0	8	18	stripping
	12	"	"	"	27	
	1	"	"	"	35	

# 2 Nickel						
Date	Time	Spent	Spent	Volts	Amps	29 th
Aug 8	7 ⁴⁵	1 ²⁰	60	113	9	29 th
	8 ⁴⁵	"	"	"	54	Stop
	9 ⁴⁵	"	"	"	63	Stop
	10 ⁴⁵	"	"	"	72	Stop
	11 ⁴⁵	"	"	"		Stop

Removed after 29th time
in Ni bath & with
7.5 amp hrs. Ni. and
put in Copper bath
with full current on.

# 1 Nickel Bath						
Date	Time	Spent	Spent	Volts	Amps	29 th
Aug 8	7 ⁴⁵	1 ²⁰	60	113	9	29 th
	8 ⁴⁵	"	"	"	54	Stop
	9 ⁴⁵	"	"	"	63	Stop
	10 ⁴⁵	"	"	"	72	Stop
	11 ⁴⁵	"	"	"		Stop

Aug 8	7 ⁴⁵	"	"	"	49	29 th
	8 ⁴⁵	"	"	"	52	Stop
	9 ⁴⁵	"	"	"	61	Stop
	10 ⁴⁵	"	"	"	70	Stop
	11 ⁴⁵	"	"	"		Stop

Removed on 29th time
in bath after 7.5 amp hrs.
and put in Cu bath
with full current on.

Note = 30cc Cu²⁺ added 10 AM.
20 cc. " 3 PM

M.G.
 Struck coming off
 and hid to bed
 to sleep from

#2 Bath in Exp. 35 H

Aug. 10, 20.

DATE	TIME	Sp. gr.	Temp.	Volt	Amp.	Total	Remarks
Exp.	10 AM	1.280	100	8	9	9	
	11	"	"	"	9	9	
	12	"	106.5	9.5	9.5	18	
	1 PM	"	108.8	"	9.5	28	
	2	"	109	"	10	38	Aug. 11, 20.
	3	"	"	9	9	47	
	4	"	"	9	9	56	
	5	"	"	9	9	65	
	6	"	"	9.5	9.5	75	
	7	"	"	9.5	9.5	84	
	8	"	"	8.5	9.5	94	
	9	1.265	110	8.5	9	103	Cont. Transfer test of Exp. 35 Bath

Mr Edison wants to play the mallet chess when it is back up with Sapper.

#1 Bath in Exp 36A						
DATE	TIME	Sp. Gr.	Temp.	Volta	amp	Total
Aug. 10, 20.	1030	1280	100	8	9	16
	1130	"	105	9	10	26
	1230	"	108	7.5	10	36
	1300	"	110	"	10	46
	230	"	"	"	10	46
	330	"	"	9	9.5	49
	430	"	"	"	9.5	59
	530	"	"	"	9.5	68
	630	"	"	"	9.5	77
	730	"	"	"	9.5	87
	830	1265	108	8.5	9	96
	930	"	"	"	9	105
						Out
						Transfer to #2
						Lower bath.

Mr Edison wanted to play this metal disc when it is backed up with copper.

# 1 Bath m							Exp 37A
DATE Aug 11, 1920 at 10 AM							
EXP#	TIME	Sp. gr.	Temp.	Volts	Amps	T.T.C.	Remarks
	10 AM	1265	108	8.5	9	9	This disc was polished
	11	"	"	"	9	9	
	12	"	109	"	9	18	
	1 PM	1270	"	"	9	27	Ran to 80
	2	"	"	8	9	36	Amps then
	3	"	106	"	9	45	back up
	4	"	"	"	9	54	with copper
	5	"	105	"	9	63	and stop
	6	"	"	"	8	71	for Mr. Edson
	7	"	"	"	8	79	wanted to
	8	"	102	"	8	87	play the
			"	"	"		metall disc

Out

Transferts
#5 copper
bath

F 2 Bath W		Epp 38 H.	
DATE	Aug 11, 20, @ 10 AM.		
EXP#	TIME	IN	OUT
	10 AM	1265	110
11	"	"	85
12	1270	109	"
1 PM	"	"	"
2	"	"	8
3	"	107	"
4	"	"	"
5	"	"	"
6	"	"	"
7	"	104	"
		9	176
		9	9
		9	18
		9	27
		9	36
		9	45
		9	54
		9	63
		85	71
		85	80
		Out	

This disc
 was polished
 Row to go
 Amp. then
 back up
 with zipper
 and strips
 to be given
 to the line
 to play the
 metal disc.

Transfer to
 60 Gp
 both

F 1 B. in
NOTE

Epp 39#

Epp

10. 1270 106 9. 14

Aug. 13, 20

Runs Min
then back up
with upper
lower jaw
and then
to pencil
dents appear

Put in #7 Cu Bath
Run for 4 hours.
did not show any
dents after stripping

Station 1 Bath in Egg 40 H
 Start Aug 13 20. at 12 AM.

TIME	Sp. W	Imp	Volt	Amps	Ital	Remarks
12 AM	1290	105	8.5	9		Put in dry
1 PM	"	"	"	8.5	9	1 revolution
2	"	"	"	8.5	15	then current on, run to
3	"	"	"	8.5	26	40 amps.
4	"	"	"	8.5	35	
5	"	"	"	8.	43	

Out to strike

No dents appeared

✓ Duplicate of above Egg 41 A.
 Start put in 22 Bldg Bathing

TIME	Sp. W	Imp	Volt	Amps	Ital	Remarks
Aug 13, 8 PM	1295	102	8.5	6.5		Put in dry
9	"	"	"	6.5		rev. then
10	"	"	"	6.5		current on
11	"	"	"	6.5		for dents
12	"	"	"	6.5		

1/2 Out to strike

✓ Dup of Egg #41 A
 Start put in 22 Bldg Bathing

TIME	Sp. W	Imp	Volt	Amps	Ital	Remarks
Aug 13, 7 PM	1295	102	8.5	6.5		Put in dry
8	"	"	"	"		1 rev. then
9	"	"	"	"		current on
10	"	"	"	"		for dents
11	"	"	"	"		
12	"	"	"	"		

1/2 Out to strike

Put in 22 Bldg Aug 14 1 PM
 2: P.M.
 1st. Strips from 1st. Bldg

Put in 1st strip from 4:30
22 Bdg
2 P.M.

Put in 22 Bdg
4 P.M.
2nd strip from 4:30

#	Bath	Egg #	TIME	Sp. Gr.	Imp.	Volts	Amp.	Intal	Remarks
Aug 13		43H	9:30 AM	1245	102	8.5	6.5		Put in wet
			10:30						1 rev, then
			11:30						current on
			12:30					33	Egg for cloths
Aug 14			1:30					Out	
		44H	9:30 AM	1265	102	8.5	6.5		Put in wet
			10:30						1 rev, then
			11:30						current on
			12:30					33	Egg for cloths
Aug 14			1:30					Out	
		41H	2:30 AM	1270	102	8.5	6.5		Put in dry
			3:30						1 rev, then
			4:30						current on
			5:30					46	
			6:30					Out	
			7:30						
			8:30						
Aug 14			9:30						
		42H	2:30 AM	1270	102	8.5	6.5		Put in dry
			3:30						1 rev, then
			4:30						current on
			5:30					46	
			6:30					Out	
			7:30						
			8:30						
			9:30						

Put in 22 Bldg
2nd stripping from skin
4 P.M.

Experiment
3rd stripping

Bath

Exp #	TIME	Sp. Gr.	Temp	Voltage	Current	Notes
Aug 14	22:30 23:00 23:30 24:00 24:30 25:00 25:30 26:00	1270	102	8.5	6.5	Reverse Eggs 43 H Put in wet 1 row, then full current on 46 Out
Aug 14	23:30 24:00 24:30 25:00 25:30 26:00 26:30 27:00	1270	102	8.5	6.5	Eggs 44 H Put in wet 1 row, then full current on 46 Out
Aug 14	1 2 3 4 5 6 7 8	1270	98 " 102 104 97	8.5	6 6 6 6 6 6 6 6	Eggs 43 H Put in wet 1 row, then full current on Out at
Aug 14	1 2 3 4 5 6 7 8	1270 " " " " " " "	98 " 102 105 107	8.5	6 6 6 6 6 6 6 6	Eggs 44 H Put in wet 1 row, then full current on Out at

Lat. Ni
Start Aug. 15, 20 @ 6³⁰ PM

Epp #3 H

Exp #	TIME	Sp	42	50	Volts	Temp	Int.	Remarks
	6 ³⁰ PM	1265	105	6.5	6			250 °C. eme.
	7 ³⁰	1265	108	7	6	6		Glacial Acetic
	8 ³⁰	1265	108	7	6	12		Acid. Faint
	9 ³⁰	1270	108	7	6	18		red before adding
	10 ³⁰	1270	108	7	6	24		Glacial Acetic
	11 ³⁰	1270	108	7	6	30		Run to 44 amp/pt
	12 ³⁰	1270	108	7	6	36		Out.

~~Stop~~
This disc was
cleaned with small hand brush
before put in Elect. Chamber.

Bath in Egg 44#
 Part Aug 15, 20 @ 6.40 PM.

Time	Temp	Volts	Watts	Notes
6:40	1265	105	65	6 Duplicate
7:40	1265	105	7	6 of Egg 44#
8:40	1270	105	7	6 12
9:40	1270	105	7	6 18
10:40	1270	105	7	6 24 Takes out 44
11:40	1270	105	7	6 30 Transfer
12:40	1270	105	7	6 36 Out

4# Shipping
 Disks were cleaned with small
 hand brush before putting in Elect. bl.

#11 Battle N
 DATE Aug 16-20 3:30AM
 EXP#

TIME	V _g	V _g Imp	V _g V _g	V _g Imp	Total	Remarks
3:30	1280	105	9.5	10		
4:30	1280	105	9.5	10	10	Temp of 4th
5:30	1280	105	9.5	10	20	chip being exp. pt
6:30	1280	105	9.5	10	30	raised to 1000 ft
7:30	1280	105	9.5	10	39	1000 ft
8:30	1270	107	9.5	10	49	
9:30	"	"	"	9	58	
10:30	"	"	"	9	67	Cont

Transfer to
 # 899 Battle Ch
 at 24 Rdg
 12:11PM Hds.
 at 11:30M
 Aug 16 20.
 2 R.P.M.

2 Bath Ni' Exp 44A

DATE Start Aug 16-20 3-30 AM

EXP#	TIME	g	Imp	Volts	Amp	Total	Remarks
	3.30	1280	105	9.5	10		
	4.30	1280	105	9.5	10	10	5th striping
	5.30	1280	105	9.5	10	20	duplicate
	6.30	1280	108	9.5	10	30	4th fourth strip
	7.30	1280	108	9.5	9.5	39	stripes raised
	8.20	1270	107	9.5	9.5	49	to 16 Amps file
	9.20	"	"	"	9.	58	
	10.30	"	"	"	9.	67	Cut

Transfer to
69 Bath
14 Amp. hours.
Oct 11:30 AM.
Aug 16, 20,
2 R.P.M

Tarnish removed by benzide, dried on
 Rubber coated by 3 fed Alth.
 Polished on machine
 Washed in washer + Brushed with
 Standard Brush. (Brady has it),
 then rinse distill water.

Elec. Cleaned 15 seconds

Washed, rinsed distill water, then
 one minute in 8/4 washed rinsed
 distill water and put in bath wet
 one revolution, then current on
 Run to 70 Amp hours and stop

Be careful in stripping, not to
 mar the Edge
 Have E & examine under
 microscope.

#	DATE	TIME	Volts	Amps	Total	Remarks
1	Aug 16, 20 at 5:30 AM	6 PM	120	107	9.5	10
2	"	"	"	"	"	10
3	"	"	105	"	"	10
4	"	"	"	"	"	10
5	"	"	104	"	"	10
6	"	"	"	"	"	10
7	"	"	"	"	"	10
8	"	"	"	"	"	10
9	"	"	"	"	"	10
10	"	"	"	"	"	10
11	"	"	"	"	"	10
12	"	"	"	"	"	10
13	"	"	"	"	"	10
14	"	"	"	"	"	10
15	"	"	"	"	"	10
16	"	"	"	"	"	10
17	"	"	"	"	"	10
18	"	"	"	"	"	10
19	"	"	"	"	"	10
20	"	"	"	"	"	10
21	"	"	"	"	"	10
22	"	"	"	"	"	10
23	"	"	"	"	"	10
24	"	"	"	"	"	10
25	"	"	"	"	"	10
26	"	"	"	"	"	10
27	"	"	"	"	"	10
28	"	"	"	"	"	10
29	"	"	"	"	"	10
30	"	"	"	"	"	10
31	"	"	"	"	"	10
32	"	"	"	"	"	10
33	"	"	"	"	"	10
34	"	"	"	"	"	10
35	"	"	"	"	"	10
36	"	"	"	"	"	10
37	"	"	"	"	"	10
38	"	"	"	"	"	10
39	"	"	"	"	"	10
40	"	"	"	"	"	10
41	"	"	"	"	"	10
42	"	"	"	"	"	10
43	"	"	"	"	"	10
44	"	"	"	"	"	10
45	"	"	"	"	"	10
46	"	"	"	"	"	10
47	"	"	"	"	"	10
48	"	"	"	"	"	10
49	"	"	"	"	"	10
50	"	"	"	"	"	10
51	"	"	"	"	"	10
52	"	"	"	"	"	10
53	"	"	"	"	"	10
54	"	"	"	"	"	10
55	"	"	"	"	"	10
56	"	"	"	"	"	10
57	"	"	"	"	"	10
58	"	"	"	"	"	10
59	"	"	"	"	"	10
60	"	"	"	"	"	10
61	"	"	"	"	"	10
62	"	"	"	"	"	10
63	"	"	"	"	"	10
64	"	"	"	"	"	10
65	"	"	"	"	"	10
66	"	"	"	"	"	10
67	"	"	"	"	"	10
68	"	"	"	"	"	10
69	"	"	"	"	"	10
70	"	"	"	"	"	10
71	"	"	"	"	"	10
72	"	"	"	"	"	10
73	"	"	"	"	"	10
74	"	"	"	"	"	10
75	"	"	"	"	"	10
76	"	"	"	"	"	10
77	"	"	"	"	"	10
78	"	"	"	"	"	10
79	"	"	"	"	"	10
80	"	"	"	"	"	10
81	"	"	"	"	"	10
82	"	"	"	"	"	10
83	"	"	"	"	"	10
84	"	"	"	"	"	10
85	"	"	"	"	"	10
86	"	"	"	"	"	10
87	"	"	"	"	"	10
88	"	"	"	"	"	10
89	"	"	"	"	"	10
90	"	"	"	"	"	10
91	"	"	"	"	"	10
92	"	"	"	"	"	10
93	"	"	"	"	"	10
94	"	"	"	"	"	10
95	"	"	"	"	"	10
96	"	"	"	"	"	10
97	"	"	"	"	"	10
98	"	"	"	"	"	10
99	"	"	"	"	"	10
100	"	"	"	"	"	10

Back up paint
 approx 24
 bbls

Duplicate of Exp
45A

#	DATE	TIME	Q.	Temp	Victor	Amplitude	Total	Remarks
2	Bath in							Exp 46A
	Aug. 16, 20.							
6 PM		1250	107	9.5	10			
7		"	"	"	10	10		
8		"	106	"	10	20		
9		"	"	"	10	30		
10		"	104	"	10	40		
11		"	"	"	10	50		
12		"	"	"	10	60		
1 AM		"	"	"	10	70		
2		"	"	"	10			

15 Sec. in Elect bleaser
1 Min. in 8/4

Part in 24 Bldg back up
with Copper to see if those
Michael appears, or else.

#1 Elect. Ni

Eph 47A

DATE Aug 17-20

TIME	Volts	Amps	Total	
200	1270	107	9.5	9
300	1270	107	9.5	18
400	1270	107	9	8 26
500	1270	107	9	8 34
600	1270	107	9.5	8.5 43
700	1270	107	9.5	8.5 52
800	1270	107	9.5	8.5 60
9	"	105	9.	8.5 69
10	"	107	9.5	8.5 77
11	"	"	"	8.5 86
12	"	"	"	8.5 94
1 AM	"	"	"	8.5 103

2 Both Ni

Exp 48A

Date	Aug	17-20				
Time	Wt	Gr	Temp	Volts	amp	Total
2.00	1270	107	9.5	9		18
3.00	1270	107	9.5	9		27
4.00	1270	107	9	9		36
5.00	1270	105	9	9		45
6.00	1270	105	9.5	9		54
7.00	1270	105	9.5	9		63
8.00	1270	105	9.5	9		72
9	1	"	9.5	9	8.5	80
10	"	"	10.6	9.5	8.5	91
11	"	"	"	"	8.5	99
12	"	"	"	"	8.5	108
1 PM	"	"	"	"		
2						
3						

Cat

15 sec. in blast: cleaner
 1 min in $\frac{8}{4}$
 Run to 103 Amps,
 transfer to #24 Bldg. to
 back up with Copper.

face of ni was brushed with
 hand brush before entering cell

#1 Bath Ni

Effe #43A

Started Aug 18-20

Time	Sp. Temp	Temp	Volt	amp	Total
2.00	1290	105	9.1	9.5	9
3.00	1290	"	"	9.5	18
4.00	"	"	"	9	27
5.00	"	"	"	9	37
6.00	"	108	9.5	9.5	46
7.00	"	109	"	9.5	55
8.00	"	"	9	8.5	63
9	1280	107	9	8	71
10	"	"	9	8	79
11	"	"	"	8	87
12	"	105	"	8	95
1	"	"	"	8	103
2	"	"	"	8	

Out

Duplicate of #44#

#2 Bath Ni

Started Aug 18-20

Exp #447

Time	Sp. Gk	Temp	Volt	amp	Total
2:00	1290	105	9	9.5	
3:00	"	"	"	9.5	9
4:00	"	"	"	9.5	19
5:00	"	"	"	9.5	28
6:00	"	108	9.5	9.5	38
7:00	"	"	"	9.5	47
8:00	"	"	9	9	56
9	1280	106	"	9	65
10	"	"	"	9	74
11	"	"	"	9	83
12	"	"	"	9	92
1PM	"	105	"	9	101
2	"	"	"	9	110

Out

#1 Bath

Start Aug. 19, 20.

Mr Edison

Master Male

Eff. # 497

Suffer face

Seizure & many

11 AM

12 PM

1 PM

2 PM

3 PM

4 PM

5 PM

6 PM

7 PM

8 PM

9 PM

10 PM

11 PM

12 PM

11 AM

12 PM

1 PM

2 PM

3 PM

4 PM

5 PM

6 PM

7 PM

8 PM

9 PM

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8 PM

9 PM

[ITEM(S) FOUND IN BOOK]

[JULY 12, 1907]

~~Put~~ Ni 191 amp hours -
Washed - rinsed distilled
water dried on roller -
put in with ~~200~~ full
Current on —

Subsequent of #2 in bath
put in #7 in Bath.

Kept in the same as
above except put in wet

Total amp hours 171

8 Bath

July 14 —

Next 2 Nicks are to be put in
One with full Current on dry
The other full Current on but put in wet
with full Current on

When put into Copper Bath both are
to go in dry with full Current on

#1 Bath Ni Plate

11-PM July 14, 20

Ni face disc.
Cleaned with lime
Wash in whirler, rinse distilled
water.

Put in Electric Cleaner 20 second
Wash in whirler, rinse distilled
water.

Put in 8-4 20 seconds
Wash in whirler, rinse distilled
water.

Put in Ni Bath dry,
full current on

Noticed blisters about 20
minutes after running in
Ni bath.

Taken out 1/2 hour
after started, to try a new set.
second set put in at 12-PM.

#2 Bath Ni Plate

11-PM. July 14, 20.

Ni face disc.
Cleaned with lime.
Washed in whirler, rinse distilled
water.

Put in Electric Cleaner 20 seconds
Wash in whirler, rinse distilled water
Put in 8-4 20 seconds

Wash in whirler, rinse distilled
water.

Put in Ni Bath wet
full current on

Noticed blisters about 20 minutes
after running in Ni Bath.

Taken out 1/2 hour after
started, to try a new set.
Second set put in at 12-PM.

[ITEM(S) FOUND IN BOOK]

Hi face disc.
Electric leaner 30 seconds
8.4 - 1 minute
Put in hi bath dry, full const.

[ITEM(S) FOUND IN BOOK]

#1
July, 15, 20

Of the 2 Nickels now
plating put in both dry
in Copper bath.
With full Current.

Don't hesitate when 2 dgs.
goes in or you will burn them
but put in too quick
as it will carry air bubbles
down.

#1 in Bath to #7 Copper Bath
2 " " #8 " "

~~Put in #7 Green~~
Pliers.

#1 Bath in dry July, 15, 20
When #2 " wet present Nickels

Come out - put in two
more - run 2 minutes
then put Current on

After running 30 minutes
Open circuit for 20
minutes to let both run
without Current -
Then Close circuit &
let run 45. or more
amp -

(What about copper bath)
Bath in Copper dry full an

[ITEM(S) FOUND IN BOOK]

~~One~~

July, 15, 20

Bath treated $\frac{1}{2}$ min
in Cleaner

1 minute each in 8/4

Clean, rinse, dry one ^{20 AMP} #1 Bat

+ put other in wet ^{20 AMP} #2 Bat

1 Minute each without
Current on then full
Current ~

5

[ITEM(S) FOUND IN BOOK]

July 16, 20

②

2 N faced females — ^{Considerably} Round Edges

Put in dry — Let them revolve 2 min then
put Current on
Put 75 amperes on —

Wash, rinse, dry & put in Copper bath
with full Current on

Note when Trees start running out from
the Edges

Put on 800 amp —

Bath above Electrocleaned
30 sec One minute in 8/4
Test Copper Red

[ITEM(S) FOUND IN BOOK]

Schedule July 20!

started with #6 pH 10 H.

500 cc more H₂SO₄
acid in system

All Coppers

go in with full

Current on & WET.

They can be dried

if necessary before

but not put in until

Wet. ———

Nickels same —

Can be dried if

necessary but put

in wet

after 1 Revolution

Close Switch

Temp on Copper Bath 117.0 @ 8.00

[ITEM(S) FOUND IN BOOK]

Aug. 16, 20

2 Discards The Varnish removed
by Benzol, dried & Rubbed with Fred cell
Polished on Machine —

Washed in W. washer & brushed
with standard brush (Brady has it)
Then rinsed distilled water

Cleaned 15 seconds —

Washed, rinsed, then 1 minute
in 8/4, washed, rinsed, put
in bath wet. 1 Rev & then
Current put on — 70 amp
hours & stripped,

Be Careful in stripping not
to Mar the Edge —

Have C examine under
Microscope

Entered in book Exp 45 H.
46 H.

[ITEM(S) FOUND IN BOOK]

Aug 19, 20
Telegraph Record Mallet

Polish Twice over - wash
in brush,

Clean 15 - wash then in 8/4
till deep red, wash -

Then put in Nickel bath
4 ampers for 4 hours

Then go to full ampers

Removes from Ni bath

and put in Copper bath
at 4 amp for 3 hours

Then full Current on not
above 14 amp & plate 52 hours

[ITEM(S) FOUND IN BOOK]

#1

Copper disc 8/4 —

6 Revolutions
in coffin
for 1 Rev

Then ~~Rev~~ amp hours

Then Wash & whet dry
& put in Copper Bath
for 600 amp hours

Then I will peel it if
feasible

No 2

one Rev. in air bath

**Notebook Series -- Notebooks by Edison and Other Experimenters
Disc Plating Experiments
Notebook, N-20-08-18.2**

This notebook was used by Edison during August-September 1920. The entries pertain to the plating processes involved in the manufacture of disc records. The notes describe efforts to improve the surface of disc record molds by polishing the copper masters with a rouge mixture and the nickel-faced females with an emery paste. The entries also report attempts to improve the plating by changing the acid and copper sulfate content, by improving the filtering operation, by adjusting the plating schedule, and by applying a coat of rubber solution to the back of the mold to prevent copper and nickel deposits. Inserted into the book is a note from Paul B. Kasakove to Edison describing a mold plated with a copper shot anode. The cover is labeled "T-A-E No 4 Plating Disc." The pages are unnumbered. Approximately 75 pages have been used.

E-2458

N200818.2

Aug 18/20

Our little Cu bath had 140 grms
Blue Vitrol to liter. 34 gals, 9 acid
stripping dipped in
 $1\frac{1}{4}$ for 30 sec gives dark burnt
deposit - We then put in
26 lbs of Blue Vitrol Extra
Then stripping $1\frac{1}{4}$ in
showed ok Copper except $3\frac{1}{16}$
strip at bottom edge which
was dark burned. We
Electro cleaned the stripping
previously - Acid unchanged
appears $1\frac{1}{16}$ red. Thin in bright spots

We now will add Ten lbs
more Blue Vitrol which
will I calculate bring
CuSO₄ up around 285
grms per liter 310 grms
saturated in water at
ordinary temperatures

Aug 18/20

The Cyanide process used by Dempsey for determining Copper is not adapted to testing our bath. When Michel is in Anodes as any Michel dissolved functions as Copper @ Counts as Copper & this throws one off as to amount of real Copper in solution.

The big solutions are not high in Ni yet. But our Exptl. bath. Have to our great surprise more Ni than Copper.

Dougherty is to introduce a different test determining real Copper Content & Michel as well as Iron & we will not get off again — Our rejection of Moulds have reached a very high figure.

Mostly due to gas dents in Ni
plating & in Copper backing
the Copper don't weld to
Ni - always 25% fail to
Weld + always on sides
the disc is put in -
Probably burns edge &
deposits red sponge + subsequent
Copper shrinks away as burnt
Copper don't adhere

Our Cu bath before we
put in the more CuSO₄
had 34 gals. 10% put
in 36 lbs of CuSO₄

Old assay

H ₂ SO ₄ acid	9.03 grams per liter
CuSO ₄ 5H ₂ O	142.79
NiSO ₄ 7H ₂ O	176.53
H ₂ , ⑥0 ₃	3.43

this chry of acid in #24
may be one of the reasons
of heavy discharge of self-heating
acid is a good cleaner

Aug 18/20

Doughtery tells me that
the old formula for
Copper Baths should be
this

Spec 9 about 1.170-

Free H_2SO_4 25 grams liter

Blue Vitrol - 200 " "

his advice they have a little more Cu than necessary
but very rich of acid.

Our little bath since I added
36 lbs Blue Vitrol

Will probably have

270 to 285 ppm Blue Vit

per liter + 22 grams H_2SO_4 free

per liter, + 145 grams per

liter of H_2SO_4

Doughtery advises
that as the nickel in

Our big bath rises above
a predetermined point that
we remove say $\frac{1}{3}$ of sol
Boil down & crystallize
out the CuSO_4 & use for
making new solution
& the NiSO_4 purified by
 Ni(OH)_2 at Lake -

Today - Big bath assay
22A Spec G 1.172. H_2SO_4
1859 grms per liter
223 " " CuSO_4

22B -
Spec G 1.162, H_2SO_4 13.17 grms per liter
 CuSO_4 - 216 grms per liter

24 Spec G 1.161 - H_2SO_4 12.69
grms per liter.
213 grms per liter CuSO_4

Our Ni filter press. Elout
changed cloths every 24 hours
The cloth is the finest that is
used in filter presses & you
can hold it up to the light
& see its nothing but a
sieve & only does good
filtering when fully covered
with the dark slimy mud
but before could accumulate
enough it lost its filtering
power. yet we had 50 lbs
pressure on - Moore investigated
& found that the rubber ferrules
were all out of line that
cloths never put in straight
& the pressure closed the
water channels the rubber
ferrules ~~not~~ deformed not
being in line & closed up
so liquid didnt get to
cloths etc -

Moore went over to see
showers expert & get
information & check

lettering cloth also
lined up the female inlet.
Stratched the cloths &
now instead of pressure
rising to 50 lbs in 24
hours its gone 24 hours
& pressure is only 12
lbs -

He with put in new cloth
double as thick as cloth
now used, new ferrules
lined up, & fix the holes in
checkerboard so cloth
cant close them & try -

Shivers man says letter
cloths should be boiled
in water 2 or 3 hours -
Cool off - Cut water
put in - & when removed
from press cleaned &
boiled again for short
time & put in wet (10)
moist, & sand cloth

L. Vinson

Night Asset Supt

Plating Plant

Should last several months
+ stand $\frac{1}{4}$ to $\frac{1}{2}$ " of mud -

Copper backing

Have just discovered cause of

Series dents - its due to high

density making gas bubbles

in cleaner or in Copper backing

The gas insulates the Ni

+ the edge has great density
and builds up red brass

Note

Aug 19/20

All experiments with edge of disc $1\frac{1}{4}$ inch in liquid bath Cu & Ni - ~~not~~ put in bath with. Current on full show burning bad with low Copper in sol. It improves very much with very high Cu Content. Still more with acid 20 grams to liter -

Our Exptl Sol is loaded with NiSO_4 . Reg lvs solution has been stronger than ours

With 4 amp. a disc not cleaned shows if only in 2 or 3 minutes that $\frac{1}{2}$ of the whole surface is not plated over. The music grooves at bottom not plated at all where ball goes. No finger marks deposited on it takes a long time 10 min before the stains & dirty parts cover, Hence we really

Note

at first have a plating
area only $\frac{1}{2}$ to $\frac{2}{3}$ of what
we thought we had, hence
the closing of the full
Current on such a reduced
surface & also to fact
that the Edge has 50%
more current go to it
than any other parts
gas is formed also dirt
nuclei has an edge all around
it & the Edge has high
density, hence brods
dents Ejectors from dirt
nuclei & gas & stripped
face due to burning
& formation on red porous
surface,

By plating at a low
density of $\frac{1}{4}$ amp
no burning of gas made,
the Edge around dirt nuclei
has very low density
& forms no Craters to

Produce Cavities -
So that in 2 or 3 hours
we have 001 thick of
plating not burned & no
gas + chemically clean
Then when we put full
16 amps on no change
of disc is noticed on exit
from liquid in rotating

We are going to put Res
Coils on amp meter side
of switch - & abandon
reading with 1 amp
meter. We propose
polishing the female
by once over in polisher
Clean in Water jet cleaner
with brush twice distilled
water. Then electro clean
15 sec. 8/4 - for 30 seconds

Wash, rinse distilled
Put in bath wet, rotate
3 or 4 revolutions to
permit acid to dissolve
any oxide then close
coil switch which is
adjusted to 4 amperes
Leave on 3 hours -

This gives 12 amp hours
& deposits .001 sheet,
Then ~~close~~ throw
switch over to full
Current say 16@17
amperes to Run for say
50 hours -

note

S

1

Aug 19/20

At last we know why trees
grew on the edge of our
discs in experimental
Lab since $3/4$ in middle &
 $1/2$ at edges. While previously
none grew from discs in
Bog & Co. bath.

It was due to the fact
we had only 142 gms of
CuSO₄ to the liter.

While works has 220 to
245. They also had 15
gms H₂SO₄ & Co. only
9 -

When we
added 36 lbs of CuSO₄
& 300 cc acid, we went
higher in CuSO₄ than
works probably 290
gms per liter & perhaps
18 gms. acid.

After this our discs no
longer grow trees & act
like works, after 26
hours plating is fine.

Notwithstanding we have
176 gms of Ni to date
in addition

Make some Res coils for
4 amps on $9\frac{1}{2}$ V for
Copper baths. 39 of them
will start all backing
of Ni moulds with
3 Hours at 4 amp then
full current for 50 Hours

Will also get coils for
3 ohms for Nickel
baths & plate 3 hours -
then throw over to full
current. with 39 Nickel
& 98 or one Cu table
we can determine value
of this process

Aug 19/20

Noticed a female ^{hipped} put in
Current Oper - 3 Revolutions
made & switched closed
with 4 amp coil -
That it required 7 minutes
for the tint to even up
so uniformly coated -

We will try putting
another ⁱⁿ with the
4 amp on & see how
long it takes,

Also another like the
first but will brush it
~~off~~ see if after
taking out of Ni bath
& washing, if ^{brushing} ~~brushing~~
does good, ~~test~~.

We find that putting in
4 amp with Current on
didn't clear up in
minutes, but the difference
in tint was marked the
one put in without Current
~~for~~ 3 rotations & then put
Current on showed a bright
Copper tint on half &
the other dark tint
disappearing in 7
mins

Whereas the one put
in with Current on
showed a bright tint &
other half a Red tint
& didn't disappear
for 7 minutes & now
after 20 minutes the
2 tints are distinct

~~From this we~~
Conclude that
pulling in with
Current on is Not ^{good}

Note

We put another in
without current on
but brushed —
This acted no better
than the one put in
without current &
not brushed — 4 amp

We will now put one
in which is electrically
cleaned with current
off — 4 amp.

Note — The tech matrix
they said they couldn't get
a good sample I put it
in nickel 3 amp after
cleaning 15 sec ~~5~~ 8/4 till
it got red — Then transferd
to our Cu bath 4 amp.
put in current off — after
a Revolution put current
on — 3 hours, then

20

Put full Current on
but it showed no tint
as it came out.
Showing the same as
another disc did the
same way. 3 hours 4 amp full
current until Total 72 amp. 811
Tinting of $\frac{1}{2}$ the record
is due to oxidation stains
8/4 film. etc - but once
the covered by chemically
clean metal increasing
the current 4 times
shows no change

Notice 2 females put
into the bath. 4 amp.
That in No 1 was bright
when put in & quickly
covered. That in No 2
was tinted by solution
& other irregular causes
dark



but after $\frac{1}{2}$ hour you
can still notice the
dark tinted spots in
places -

This should warn us
to clean our working
flexibles when they are
treated by running them
over the Polishing
Machine at least
once over & if very
bad twice over using
30 sec $\frac{3}{4}$ But never
using Elcero washer
more than 15 sec.
& Brushing in water
jets. Care being taken
that sp. should be
1 minute strength
to the test Copper

The stain x is due to



Some kind of oil leaking
in on a flex. probably

Copper & the acid attacks
the nickel corroding it
the dark tint being corrosion
shadows. I have noticed
this corrosion on many
moulds, spots or rather
spaces in mirror ~~look~~ ^{appear}
looked like dirt plated in
water shown when light
was right that there was
no space of dirt but it
was corroded & when
light right showed all
metal. Originally it
may have been dirt &
it had fallen out.

Aug 20/20

One of Cullen discards
which he put in bath
& hesitated, shows a
big blister, $1\frac{1}{2}$ area —
two dents were on the
surface. These on Ni
stripped showed traces
of copper tint.

The stripped copper
surface was clean &
cut blister out & found the
dents. Somehow the
blister was raised up
but the 2 spots producing
dents stuck & then peeled
Ni down while spec
pressures acted to strip
the Ni from the copper.
The pressures must have
been very high to stretch
this out & flatten this
spot was easy dropping. (11)

Whereas all adjacent areas
was clinched. Gas probably
leaked into this area
was one of the dents.

Took a discard nickel faced
female.

Put on polisher & went over
it with Emery & brush on
machine

III III - Examined. No wear

I start on another 10
times over.

III III - This makes 20
times over = No wear is
perceptible so far -

III III This makes 30 times over.
I cannot detect any wear
of big waves or any where
no scratches -

III III This makes 40 times
no wear detectable -

NOTE

UK UK 50 times over with
SFXXX Washington State Steel
Every one wear - no wear at all

I will now treat the
mould which has been
polished 50 times -
shows no signs of wear
with 8/4 direct for 1 minute
without wearing shoes
then polish to see
how many 8/4 treatments
I can go at 1 men strength
for Copper + grind the
surface off to rate wear

MISTAKE

All these experiments
with grinding solution
is with a female

III III 50 times over by
flour Emery & Tooth Brush

All these results are
with a female

& this would show
wear like a Male

I will now polish
a MALE & see
how many times
it goes without
being flat Top -

I now polish a
working Mould - Male

III III 10 times. Can't see
wear except

Chatter Marks

Show still but have

Disappeared from the
top, but some had worn
off making records as
this is a working mould
off pressure.

26th
On 20th Aug 348 Doses
removed from Baths
of which only 10 were
discarded in the Control
room which is abnormally
high. These went in
24 days previous or say
54 hours.

About the time they were
put in we brought acidity
of bath up, for we lack
24 weeks but from 12,30
gives acid to 16 about.

Also we had better falling
in 24 -

also added very much
more Acid in Nickel

Also new better falling of Ni sol
+ Cu sol in 24 -

Aug 21/20

Complete test by Dougherty
of the Copape Solutions
in 22A + B + 24

	22A	22B	24
Speed	1.175	1.174	1.167
from H ₂ SO ₄ growing for 24 hrs	14.44	17.59	14.57
Blum Vitrol	231.31	227.32	218.58
NiSO ₄ Tag	16.75	27.38	17.47
$\frac{1}{2}$	0.713	0.824	0.646

Dempsen is adding acid slowly.
When he started it moulds
that went in after the addition
of 1st lot had low repetitions
2 1/2% in Control room 328
taken out previously # 24
only had 12 acid.

The reason disc come better
when acid increased say in
#24 from 12.47 gms per
liter to 22.58 gms per
liter is due to the stronger
acids cleaning power on
the disc when first put in
also in a measure to better
conductivity & greater
efficiency of the anode.

25 gms free H_2SO_4
is the standard but
owing to a poor test method
it had fallen to 12½ gms
& descends got very
high - 18.6 but it to 19
which is much improved
the OK discs in Central
room & probably in
Lathe & Press room from
which it is hard to see.
Reports -

20

Aug 23-20 See last page

Dempsey has added more
free H_2SO_4
Baths now tests by new
method of testing

#24 Spec 9	1.170
22A "	1.180
22B "	1.180

#24 Free H_2SO_4	22.58	
22A "	20.95	25.06
22B "	20.75	

24 Cub04	229.29
22A	236.96
22B	234.92

Disc coming good in
Central room -

25 gms H_2SO_4 free
acid in Cu baths
is standard

23 Aug/20

I have noticed several times
that moulds which have
flat tops on all the
music waves & produce
records which are very
bad & should never be
shipped that the flat
tops are all moulded



Bright &
Moulded -

May be due
to spongy
Ni - To
The Chloride
to which
record being
pressed against
something hard
in lathe room or

This moulds making the record
was running & (how)

it pulled off - It shows
very bad flat tops as well
as the sections from it -

I will polish & see if
it helps & also make a
test record -

Aug 24/20

Kasacova has 5 men in
his dept & will take on one
more from Mike Costa
who he has been using

E Mooney

V Mesa

J Gross

M Campesi

S Cogza

Toxendru

"

"

Anders, degen

"

He has made Experiments & find
with Cloth separation &
Maple hole depts no
practical difference in composition

CS9

He is changing over to
Maple as fast as he gets
them —

Aug 24/20

Present Schedule on
Presses

2: on Contact - 90 lbs
pressure -

10 minutes on high at
850 lbs pressure

1st temp 180°

Last temp - due to
steam at pressure
presumably 125°

We take 50 of first mould
out of bath that reach
Control room & follow him
to Press Room to get
OK moulds -

Aug 20th 20

Control -

Laths.

"

Presses

None

1 Bunched

2 Loose M

5 Small Laths

1 Bunched

1 " Foreign

10

80% OK -

Aug 21

Control

Laths

"

Presses

"

2 Bunched

3 Small Laths

2 Loose M

1 Foreign Laths

5 Small Laths

1 P. Laths

14

72% - 74% Plain

August 22

Control

2 Bent,

Lathe

2 Procheulenta

1 Loose Ni

3 Group Bent

Presses

5

1 Pitted - rough

14

72% - 80% Plating

Aug 23

Control

+

Lathe

"

Presses

3 dentin

3 Scratched

2 Procheulenta

2 Pitted

2 Group Bent

12

76%

86% Plating -

Aug 24th/20

Control

none

press-

- 7 Broken Cakes
- 2 Dents
- 1 Porous
- 1 Bunkle

Presses

- 2 group Dents
- 13

74% OK

88% Flaking

Aug 25/20

Control

0

Labels

- 2 Cut thru label
- 1 Copper Smith's
- 1 P. The

Presses

- 2 Ranges plating - P. The
- 6 group with L
- 1 Dent + Scratch
- 1 Wackam, cutting

72% OK

90% flaking

Aug 25/20

326 Moulds today only

2 Discards 1 a scratch
1 a Dent

26th - 50 Wounds

Control	None
Laths	3 Bent
Press	4 group dents
	1 Pitted

84.6% OK

27th - 50 Records

Control	None
Laths	2 broken Centers
	1 plating defect
Press	4 group dents
	1 Pitted
	1 Buckles
	1 Rough plating
	1 Buckled

10 all told - 80%
 86%
 86%
 86%

28th - 50 Wounds

Control	None
Laths	1 Broken Center 1 plating dent 1 torn lath 1 Burned Copper
Press	1 Service dent

84% OK all
 90% OK plating

Aug 31

Control	None
Laths	1 Bent
Press	2 - Service Dents
	3

94% OK

To this point 78.8% of all OK
 85.2% Plating only

Wals

Aug 26/20

In screening out old slat
Ni Anode stuff thru 10 mesh
That is to be used again
The old + new mixed should
either be well washed
to get rid of clinging black
hydroxide, or the bath
should be filled nearly to
overflow & allowed to
settle before jet is turned
on. Otherwise there will
be lots of float which
may get on discs & also
muck up roller chutes

Aug 26/20
Copper Baths

	Sp4	H ₂ SO ₄	CuSO ₄
22A.	1.180	21.09	237.47
22B	1.180	21.22	235.94
24	1.180	22.45	220.11

Aug 27

	Sp4	H ₂ SO ₄	Blue Vit
22A	1.183	22.46	234.70
22B	1.179	21.22	223.67
24-	1.183	23.80	244.40

Aug 27/20

Think we have a good
Rubber Dope for backing
moulds which is non
inflammable Rubber
dissolves pretty well
in Carbon Tetrachloride
will give it a good
trial

Polished with
Rangoon glycerine in
Copper Masher it
does it pretty good
without materially
reducing Chalcopyrite
only on tips of largest
inclusions & then
can still see after
time over. Think
can polish 5 or 6
times which should
give 18 ^{7.25} ~~7.25~~ ^{7.25} ~~7.25~~
probably over over
after 3rd run enough

I will also try SF 12 X
which is much finer
than SF XXX over
regular Emery

Note - We cut in two
Req wood handle tooth
brush & make 2 polishing
brushes -

Polishing Machine

1 in Control 1 shift
2 in Lath. 1 shift
once over -

2 Machine Press
dept 3 shifts -

Total 6 Machine

Possibly 1 in
Master room -
We will use sample one
to start -

Echos are not lost in
When phone is 1" out
level either way —

Curious - Caldwell & Neil
picked out 10 Records
without starting Echos &
10 with them —
I found all had the
Echo - With rough start
on Machine their Ear
accommodation rendered
Ears insensitive while with
smooth starts the
accommodation muscles
didn't work & their Ears
were sensitive & could
hear Echos
But my accomdin muscle
are gone & I hear echos
on rough start

Aug 27/1920

Dr. Sinsol for wiping moulds

1st Solution. 500 grms CP Dichloride
to One Gallon Alcohol

2nd Solution -

4 ^{oz} of the Above to
One gal Alcohol. the latter
is the solution used

To be corrected later

Thermometers for use
throughout factory
where temp to be
measured don't

212° Fahr should be

Alcohol colored Red

+ flat broad stream of red

These can be read

Easily from a distance

in dim light.

The type is to 6738

in Emeralds Catalogue

80 cents but even so

got cheaper

Today Mac lost in a
female & Male described
today. The Male for
dents;



3 of them like this —

Nothing could be run on
female — There were
3 dents in a row



These dents were made by
3 separate rotten wood
fibers floating in bath
& attaching to female
causing injury to placenta
on female.

Aug 27/20

Experiments on ~~and~~ start repeat
and read after echo

Tried Reg schedule still in
" old schedule - to wit
Contact, 2 min, 300 lbs
2 min, then 800 lbs
12 minutes still in
both Echo before going
Tried Reg schedule +
took it out hot about
160° Fahr - still both
in

001

tried Reg schedule now in
Vague but with 600 lbs
final pressure instead
of 800 - still in but no
so prominent

The Mould we are
using is very bad.

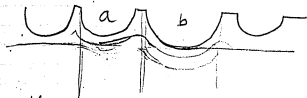
Halloo-

yet this was a full blown
good print - its independent
it didnt make a proper
print -

Regular Schedule but
only 400 lbs final
pressure -

Bad print as expected
but I can swear I get
the Echo - while in
Reg record its loud &
distinct

Possibly



flows under & rises under
adjacent grooves before
it reaches face of blank
when b reaches bottom
a is above & this flow
from b must pack it tighter
hence pressure on a
is above normal due to
flow of blank from b
this difference in
density causes a spring
up in a when pressure is
relieved on blank

I find that 3 times over polarizer
at very dark working would
good ~~it~~ with finer Emery than
SF XXX which we are
using +

The very fine is SF 12 X
It's the only size that should
be used on Ck paper

Send for 20 pounds

Look Reports of 273 Record
pages by Caldwell -
Bingham & Neil

31% had Echoes & Repeats,
Consisting of 14 Echoes
80 Repeats, true Echoes.

Many were Dupes Records
Covered 40 faces of days.

All thin those that were
OK shows no repeats
those which had repeats
always had repeats

Aug 28/20

There is no longer any doubt
that the wiping upstairs
produces flat tops and
that polishing increases
the loudness, but the Volume
even after polishing is
very noticeably less than
when new. Cannot say
if it is due to the ~~loss~~ surface
or not. Or due to movement
of the hard blank on the tops
of matrix wares.
I am inclined to think this
is cause, or movement of
moved on hard blank
several hundred times.

A trial of rubbing a
matrix (surface) with
edge of a record & closely
shows it. flattening
when light is not pressed
only flattens higher
wards.

Moore tells me that
large number moulds
haunt the springs on
to keep the moulds off
the blanks -

Indeed in one way mould
that a small low wave
~~was~~ between 2 high waves
was flat under micro
while the 2 large or high
waves showed not flat.
This is very strange &
difficult to explain of
tops are flattened by
wiping - except that
sulf is poured into the
hallow & eats or eats
metal

4000 says exp. vol. of
of lead. still C for 11.1111
water is $7\frac{1}{2}$ gal hour
& storage capacity 250
gallons

Aug 30 1920

I find it a general practice
that when rubber hose is
connected to a pipe only
one turn of Copper wire
is made hence we know
many disastrous results
loss of electrolyte

The Minimum turns
should be 34 where
it can be done 5 to
7 turns should be
made —

Found Hoffman men
were using alcohol
with O_2 19 grams

SnCl_2 to Cu —

Makes 2 dozen parts
he is now to make it
2 grams per part SnCl_2
redo it this self using SnCl_2

Note.

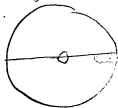
Aug 30 1920

for last 6 weeks we have averaged
Each day put in 6 albs

10	Masters
22	Master females
68	2nd Masters
<u>276</u>	Working females

NOTE

Archer found 2 repeated
discs which showed blisters
These showed marks plain
that belt had slipped
These blisters were at
the Edge just unruled



blisters

Both discs same
Will save all blisters repeat
+ follow this up

Sept 1, 20.

Note =

9 am. Baths were

	Spec g	H ₂ SO ₄	B. Vitrol
22A	1.185	22.32cc	232.57
22B	1.190	22.03 "	226.92
24	1.190	23.36c	227.43

Preliminary

	Spec g	H ₂ SO ₄	Blue Vitrol
Water	1.155	23.24	207.92
22 MU 1	1.155	24.34	201.25
22 MU 2	1.150	24.80	201.22

Mouth and ear

Copper Electrolyte had

17.47 grams Nickel to 1 liter

Sept 1-1920 44 grams

Fe 1%

Karakoram listed for 6

Baths -

Lab -

Temp 80°

Speed 12.30

Ampere 15

Volt 9.4

Free H₂SO₄ 11.37

Blue V per lb. 249

22.13 -

Temp 86

Sp. G. 1175

Ampere 15.5

Voltage 6.5

Free H₂SO₄ 22.13

Blue V. per lb. 232.31

Smaller resistance probably
due to greater amount of (H₂O)

This shows importance of
keeping up acid to 25"
grams per liter & close to it
as controlling our temperature

Same old story.

Caldwell in Middle room between
Dally & Moore gets very
much higher % of OK
records than Neil in
Music room where it is
quieter -

Sept 3/30
Latest results of
Polishing Working
females, 9 day,
work - average
for the 3 disc machine
5 Moulds per hour

Note

Sept 3rd [←] Saturday 1920

Gave order to Ramsey
that starting Wednesday 6th
morning all shifts put
all models in nickel
baths 10 hours before
putting in Copper baths

Sept 11 1920

Put plate glass 10" square
in 22A 22B & 24-

for	18	Milgrm	from 22B	Copper
got	13	Milgrm	from 22B	Nickel
	27	"	"	24
	57	"	"	22A

Am. Ethn.

This is a stripping
from a discarded
mold put thru
regular cleaning &
Nickel, and kept
50 hrs in copper
bath, using copper
shot. The copper
shot was very
crude being only
first try at it. East

On Aug 30th Took simultaneously
from all presses. whole
load of records 1168 faces
584 Records -

All were tested by
Neil & Caldwell finished
10th of Sept.

Neil was in Music room
Caldwell in 4 bly
between Dalby & Mossen
room -

Neil's place more quiet
hence higher rejection
as expected

Caldwell had 464 faces
OK + 256 faces fairly good
39.6% Good 3
21.9 " fairly Good 3 61.5%

But seconds (taken) only
gives total 27% or
47.5% Commercial

Neil went over all of same records -

1170 faces 421 Council family
Commercial Total 35.9%

Records 587 -
141 Council family Council.
Total 24 1/2%

Resume.

	<u>Faces</u>
Caldwell	61.5% &K
Neil	35.9% &K

	<u>Records</u>
Caldwell.	47.5% &K
Neil	24 1/2% &K

Shows the immense
difference between testing
in rooms where quiet
or noisy -

The greatest difference of all
is this -

If moulds are painted &
then runs them on machines
he will report few good
surfaces mostly poor
surfaces - But if they
have been run over by
the reproducer once
& then carefully wiped
clean he will report
nearly all good surfaces.

The reason is that in
grooves where ball
rides there is always
a great number of points
due to unknown reasons
These lift the ball &
grooves & round & at
same time crush to
powder. If this is
wiped out then they
do not give any account
the 2nd time over

Everyday we will have
250 to 300 new working
moulds making 125 to 150
Records to supply new
~~new~~ Times & replace worn
moulds -

Each one will be assembled
in a mould if eye inspection
shows it is not injured -

2 prints are taken on
Reg blanks -

The first one is not used
Except for reference -

The 2nd mould is run once
over by girls with approved
Reproducers

These 2 records go to the
Mould testing. The 2nd
one is cleaned with
thoroughness by cloth &
brushes

It is tested for surface Snaps
etc according to schedule
Those not passed as OK
have to pass to final
Inspection with Microscope
Whole listen & decide if
repairable if so passed
to Working Machine
Repair dept 2 or 3 men
will probably be enough
to Repair them —

The testers of the test
Record must be in
very quiet room
isolated from noise
of factory, possibly
out of the factory
away from Machinery
etc) The only
Carrying well over
500 record one cycle

We use about 2 lbs
of metallic Selenium per
week

Its bought from a Concern
in N.Y. City - It is

made by a Baltimore
Copper Refining Co

It is found in the mud
after anodes from Copper
Baths, I think this

Co is owned by
the American Refining
& Smelting Co

We paid at one time
\$1. per lb lately 24¢
lb - We have

Sept 13 1920

110 lbs - over a years
supply - We should
keep 4 yrs supply

As this Co might give
up saving it & we would
want this time to
get other Cos moving
off

Sept 14/20
With only 3 days exposure
it looks as if all Copper Nickel
Anodes made from these

give in 24 bldy 1800
gals - an increase daily
of $6\frac{1}{2}$ grams NiSO_4
per liter per day
390 galts

This is about 100 lbs
daily of NiSO_4
320 g. Nickel to 2800 g Cu
Metallic - about right
Roughly

Anchor Reports about
about trees etc

22 A Preliminary batho
"do you want skimmers
in the Cathode chamber
still retained in bath
Master room?"

I have noticed about
80% of cases where trees
originate. There is no
skimmers in anode chamber
but could not positively
say at this time that
this is cause of trees

I have noticed when a
disc is Concave at Center
after running its full cycle
of plating, when taken out
of bath it appears as if
solution was not up to
Center when plating

Also that when we

Sept 15/20

have a ~~Conley~~ center that
more nuts than usual
appear which will give
~~a~~ granulated center -

Varnishing backs of
Records with Regular
Rubber Dope from
Combn Rub Co -
Cycle

One coat 30 seconds

Rubber used each

Coat 35 cc

Oven Temp 110° Fahr

20 minutes required for

Drying -

Hence Complete Cycle

3 Coats is $1\frac{1}{2}$ Minutes

1 Machine Theoretical Temp
320.8 Hours Must have 2 shifts

Tests of Records under
Varying Conditions of
Noise by Neill & Caldwell
20 Tunes 10 Records

Sept 15/20

Music Room OK for surface 60%
Hall outside Machine Shop 80%
Machine Shop 100%
Testing booths 2nd floor 100%
showing only best tests are valuable

Sept 21 1920

Selected 4 Tunes for rough
surface for true echoes
Very loud echoes & moderate
Echoes doubling the voice
all way thru. Tried in
Office, Drafting Room
Library - Each man
noting on paper quality
of Records

Report on file in office,
Apparently public don't hear echoes
& not much of the loud surface
testably kind but I know even if they
don't hear the defects it hurts the
General Effect without their knowing it

By using glycerined
glass & dry glasses in
Celluloid dip room
find lots of filaments
of silk settled down
at this 3 days after
stopped dipping
also pieces of silk
also Coal dust from
Chimney of Captain
found 100 times larger
than could go thru
silk - showing the
cloth filter has been
full of holes for months
has allowed dirt to get
in it has been
worse than useless
& a positive injury
this shows necessity of
periodical inspection
by Genl Office Inspection

Think best condition
is a filter press 36" frames
& many frames - 1. lighter
with this we can clean
cloths easily & covered
no leaks, & get enormous
air filtering surface in
the very smallest space

Rubber backing No 1

20 gms. gum to 100 cc
Regular Cornstarch & Soda -
mixed in mixer well -

2 Coats dried in oven
at 110° Fahr. Each coat
dries OK in 30 mins, both
Coats 1 Hour -

Flowed on rough back of
Rubber Mould -

Plated thick - 50 hours
16½ amp - OK not a
single nub

A Duplicate shows
considerable nubs near
label no nubs 1½ from
edge - nubs very easy
come off with finger nail

Fred says this strip is
rougher, lots pin points
if these were roughed
down it would stop
nubs

#3 is Dup of 1 & 2
Except 3 Coats

Only 2 or 3 nubs at label
to OK.

4 Dup about 6 nubs =
All these 1 2 3 & 4

are OK for practical
work, ~~the~~ 2 Coats as good
as 3 Coats, 2 Coats work
for those not so rough &
3 for very rough -

5
Same as above mix
but 1 Coat nubs all over
& quite thick
Dup - Wonsi

This is 5 grams of Glue to 100 Rubber Dope
~~#~~ 3 Coats not a nub
out OK.

Dup - Not a nub - OK.

Fred says there were considerable
enough than #1 & 2 Model

Dup of above 2 Coats
 $\frac{1}{2}$ doz nubs at Label only

Dup - nubs at Label only
~~to~~

Dup but Only 1 Coat
Horrible nubs all
over

Dup - Horrible - H.G.
Sept 22 1920 -

With .093 nozzle the 20 gram
Glue to 100 cc Contain R Co Dope
put 14 cc on disc once over
or one Coat, we will use 2 coats on
good & 3 coats on Rough backs -

Sept 23/20

Scheme for sticking on
tissue paper on Matrix to prevent
injury -

100cc Alcohol

100 grams Rosin

10 cc Cotton seed oil

This appears good so far
but perhaps should be
6 cc oil,

Weak hot soda solution
Removes all -

Brushes ~~of~~ ^{phosphorus} ~~no~~

Wears scarcely any
Adapted on standard

Red Glass
Cust

Wheatlon bridge
thin - Resistance

021 of

1 1/2 oz on each prong

4.5 oz pressure Wear

Very small & its OK
Beats brass (yellow) glass OK

We are going to put a guard
cover over contact springs
on disc holder to prevent
men from bending them.

**Notebook Series -- Notebooks by Edison and Other Experimenters
Group 3: Recorder and Recording Experiments (1914-1924)**

This group of twenty notebooks covers the years 1914-1924; most of the books were used before 1918. The books are arranged into two subgroups. Seven books by Absalom M. Kennedy, covering the period February 1914-September 1915, contain daily records of experimental work with phonograph recorders and reproducers. Kennedy's notes include numerous references to Edison's own involvement in the experiments. Most of the entries relate to Diamond Disc records, but there are also notes on kinetophone and cylinder records.

The second subgroup consists of thirteen loosely related notebooks by Kennedy and other employees of the laboratory and Recording Division, including F. C. Burt, E. Rowland Dawson, Frank H. Losey, Walter H. Miller, and George J. Werner. Many of the experiments involve the use of various types of recorders and horns—as well as variations in the positions of horns, recording machines, instruments, and voices—in order to determine the optimum volume and quality of sound. The entries frequently bear notations by Edison, some of which are extensive. The eight selected books primarily cover the period May 1915-August 1917, but there are also some entries from 1918-1921.

Related notes on recorder and recording experiments can be found in N-15-12-20.2, Notebooks by Edison, and in N-17-02-06.1, Notebooks by Edison and Other Experimenters—Navy and Wartime Research Experiments.

**Notebook Series -- Notebooks by Edison and Other Experimenters
Recorder and Recording Experiments -- A. M. Kennedy Books**

These seven books by Absalom M. Kennedy cover the period February 1914-November 1915, with one additional entry from May 1916. They contain daily records of experiments with phonograph recorders and reproducers conducted by Edison and various other employees of the laboratory and recording division, including Harry W. Doyle, Clarence B. Hayes, Miller Reese Hutchison, Charles W. Luhr, Walter H. Miller, and George J. Werner. Although most of the experiments involve disc phonographs, there are also some relating to cylinder phonographs. Many of the experiments are intended to determine which recorders and conditions work best for different voices, instruments, and types of music. The tests involve the use of various recording heads, arms, and horns; diaphragms; reflecting screens; and connections (tubing) of horns to machine. In addition, there are variations in instruments, characteristics of instruments (for example, the piano top open or closed), and positions of horns, instruments, and voices. Most of the entries report on the results, such as the quality of the recorded sound, and Kennedy frequently mentions Edison's opinions and suggestions about particular recordings or masters. Some entries describe other work by Kennedy, such as running kinetophone demonstrations and training Diamond Disc salesmen.

All of the books have been selected.

<u>Book #</u>	<u>N-Number</u>	<u>Labels and Inscriptions on Front Cover</u>
-	14-02-28.2	"Recording Experiments"
1	14-09-21	"Daily Record of Recording Experiments A.M. Kennedy Cement"
2	15-03-17	"Recording Experiments Book #2 from March 17-1915 to June 4, 1915 Kennedy"
3	15-06-04.2	"Recording Experiments Book #3. From June 4, 1915. To Aug. 2, 1915. Kennedy"
4	15-08-02.2	"Recording Experiment Book #4. From Aug. 2 To Sept. 16"
5	15-09-17	"Recording Experiments Book #5 From Sept. 17, 1915 To Oct 21, 1915"
6	15-10-21	"Recording Experiments Book #6. From Oct. 21, 1915"

**Notebook Series -- Notebooks by Edison and Other Experimenters
Recorder and Recording Experiments -- A. M. Kennedy Books
Notebook, N-14-02-28.2**

This notebook was used by Absalom M. Kennedy during February-March 1914. The entries pertain to experimental recorders and amplifiers. The initial entries describe a series of experimental recorders produced by Harry W. Doyle. Each entry indicates the details of construction and the manner in which the parts were sealed and fastened together. Additional information about these recorders can be found in the unselected notebook, N-14-01-27.2. Following these entries is a daily record of experiments and tests performed by various laboratory staff on phonograph recorder and reproducer parts. These include tests with various distances, amplification speeds, types of recorders, and positions of recorders and voices. Some of the entries report results, such as loudness and quality of recorded tone. The notes indicate that the experiments were done by Archie D. Hoffman, Harry E. Humphrey, Miller Reese Hutchison, Alexander N. Pierman, and employees named Harper and Taylor (probably Henry A. Taylor). The front cover is labeled "Recording Experiments." The inside front cover is inscribed "Recording and Amplifying." The pages are unnumbered. Approximately 25 pages have been used.

59890

Acme Co.,

MFG. STATIONERS,
96 JOHN ST.
AND
19 PLATT ST.
NEW YORK.

Recording and
Amplifying.

RECORD OF
RECORDERS.
made by Doyle.

#1 Standard Mica .0046"
2 Gaskets
.038" sapphire - .125" lap.
Res wax for peeling diaphragm
to recording head.
Shives to peel Arm to Diaphragm
Sapphire to Arm.
Tester out o.k.

#2 Mica .008"
2 Gaskets
.038" sapphire - .125" lap.
Res used for peeling diaph.
to recording head.
Shives to peel Arm to Diaphragm.
Sapphire to Arm.

3

Mica .0025"

2 Gaskets

.038 Sapphire - .125" Lsp

Bas was for sealing diaphragm

gasket to recording head

Chelice to seal arm to diaphragm

" " " Sapphire to drum.

4

5

#6

#7

#8

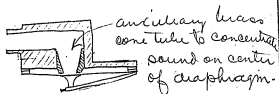
Standard mica .0046" diameter
2 gaskets
238 sapphire - .125" lap.
Standard sealing and fastening

#9

#10

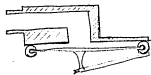
Standard

#11 Standard Construction except



#104

Special record made with
rubber tube as supplied by
Mr. Perman.



2/23/14.

Test made with 2 driving pulleys on amplifier, both top and bottom maharals. Gear also in mesh. Harper suggested that the amplifier may run better if driven from top or from both pulleys.

Tests were made driving from both pulleys, from bottom pulley and from top pulley and developed that the best results were obtained when driving from the bottom pulley. No reason therefore to change.

3/7/14

Test made amplifying at different speeds.

Test a piano record at 160-140-120-100 80-60-40 R.P.M.

Results not conclusive since the amplification was of a continuous record of varying loudness.

3/7/14.

Amplification from 7 records of alto voice in Gusman Talia Hoffman. Same voice used in each case.

Amplification of above at 40-60-80-100-120-140-160 R.P.M.

Results conclusive:

At low speeds the tones were soft and full - became louder and still natural at 100 R.P.M. Above this became still louder but sharp.

3/6/14.

Taylor made an experiment on amplifying. A piano record was made which when amplified as usual sounded rather like a bang. By increasing the speed of amplification to 120 R.P.M., a much better quality of record was produced.

3/8/14 Amplification of 7 duplicate
records made by Mr. R. H. each
in loud and low tones.
These were amplified at
40-60-80-100-120-140-160 R.P.M.
The first three were soft and
natural but not loud. The
fourth was still of good
quality and louder. The
symphonies were increasingly
loud and sharp except
the last which was not
so loud as the one at
140 R.P.M.

The low records perhaps
were best at 120 R.P.M. while
the loud records were best
at 80 or 100 R.P.M.

At low speeds of
amplification the reproduction
is full and natural but low
and with considerable surface.

At high speeds of
amplification the reproduction
is thin and sharp and loud.
Hear and other external noises
are reproduced at low speed. and

2/20/14

Tests by Mr. Humphries in
padded cell.

Record #3 - Test at 5 ft in
good full tone - Black Break favored -
trying to least and at 15', speaking
to favor the distance

Record #1 - Test at 5' in
good full tone - black speech favored -
trying to least and at 15', speaking
to favor the distance

Record by Mr. Purman. Same
tests.

Results apparently showed
#3 record best, Mr. Purman's
next and #1 best, all however
good.

Mr. Purman's record appeared
smoother than the others.

8/1/14.

Tuto with Miss Humphrey
voice.

Made with #3 Recorder.

Purity - good - full - sweet
both of voice and of piano.
Tendency to blast however
on high or powerful or
usual notes.

Miss Humphrey's voice
is good - her qualities of
expression excellent - her
enunciation fair. - She
would record fine with
practice.

3/2/14

Mr. Humphries Reading.

#3 Records used

Distance	Voice	Result
4'	Time Tone	good
4'	" "	"
6'	" "	"
10'	" "	"
15'	" "	"
15'	loud	"
4'	rapid talking	"
6'	" "	"
10'	" "	fair
15'	" "	"
6'	dramatic "	"
6'	good full tone	very good
6'	very loud	bleat
10'	Reading "	"
5'	Reading from paper	very loud
5'	" " " "	medium
5'	ordinary conversational tone	fair
5'	stage	fair

3/8/14

Mr. Humphreys Recording
#3 Recorder

Distance	Voice	Remarks
6'	fast conversation	good
10'	"	fair
15'	"	fair
6'	light voice, full tone	good
6'	rapid conversation	good
10'	"	fair
15'	"	"
6'	slow conversation, slightly raised	good
10'	"	very good
15'	"	fair
4'	rapid " quietly	good
4'	slow " "	good
2'	rapid " "	"
2'	slow " "	"
2'	slightly exaggerated	"
2'	Full Deep Tone	"
1'	" " "	"
2'	" " "	"

3/5 Miss Dunwoodie - Sing at Piano
#3 Recorder

20' - Singing

Results generally good with
exception of blots on high
strong or nasal sounds

15' - slightly better than at
20'

Making test varying between
6 and 20', best of all

Same test with #1 recorder.
good. Less tendency to
blat

3/6/14
Dis. Miss Dimmock. Skyes - Bang Piano
Recorder # 3
Recording Machine Standard
Position

20' - Not enough volume

15' - better than above.

Same test but with
recording machine & horn on floor.

20' - Volume increased and tones have
not so much sharpness of
edge as above.

15' - Same as 20' but not quite so
pronounced.

3/7/14.

Mr. Humphreys Reading.
 * 3 Rec. bu. used.
 Reader in standard position.

Distance	Voice	Result
1'	Whispering	Very good.
2'	"	"
3'	"	"
4'	"	Practical
6'	"	"
10'	"	Can hear but not loud enough
15'	"	same
6'	Deep tone	very good
10'	"	good
20'	"	fair
10'	Loud tone	too loud
15'	"	very good
20'	"	better than 15'
4'	Deep, heavy tone, sailors dialect	too loud
6'	"	practical
10'	"	very good
15'	"	"
20'	"	good.

3/7/14.

Mr. Humphreys Recording
#3 Record used.
Recording Machine standard position.

Waking test.

Distance	Voice	Result
20'	True tone - waking	good
15'	" " "	very good
10'	" " "	good
6'	" " "	trifle loud
4'	" " "	loud.
20'	Declamatory low tone waking	good
15'	" " "	good
10'	" " "	good
6'	" " "	faint least
4'	" " "	least

These tests repeated with same results.

It was noted that the results when waking were better than when standing.

3/7/14.

Mr. Humphries Recording.
+ 3 Rear View used.
Regarding Machine Standard Position.
Test, standing firm and balanced on
toes.

Distance	Voice	Results
20'	Aratund - Standing firm	good.
20'	" - Balancing	very good.
18'	" - Standing firm	good.
15'	" - Balancing	very good.
10'	" - Standing firm	good.
10'	" - Balancing	very good.
6'	" - Standing firm	good.
6'	" - Balancing	very good.
20'	Declamatory - Standing firm	Fair.
20'	" - Balancing	Good.
15'	" - Standing firm	Good.
15'	" - Balancing	very good.
10'	" - Standing firm	good.
10'	" - Balancing	very good.
6'	" - Standing firm	Fair.
6'	" - Balancing	good.

Decided improvement in
quality in each case when
balancing on balls of feet.

3/7/14.

Mr. Humphreys Recording.
#3 Record used.

Recording machine on floor.

This test was made to determine the best distance to point the voice which recording machine on floor.

Distance Standing	Distance Pointed at	Voice	Result.
20	15	Outrind - Standing firm	Good
"	"	" - Balancing	better
20	10	" - Standing firm	Very good
"	"	" - Balancing	best
20	6	" - Standing firm	Good
"	"	" - Balancing	better
20	Horn	" - Standing firm	fair
"	"	" - Balancing	better
20	about here	" - Standing firm	fair
"	"	" - Balancing	better

Results show that for this test voice should be pointed half way between location and recording machine.

Previous test proves that recording machine should not be used on floor except at distances of 20' or more.



8/7/14. Mr. Humphries Recording.
 #3 Recorder used
 Recording Machine Standard Position.

Distance Standing	Distance limited at	Voice		Result.
20	15	Lead Voice	standing firm	good
"	"	" "	balancing	better
20	10	" "	standing firm	good
"	"	" "	balancing	better
20	6	" "	standing firm	good
"	"	" "	balancing	better
20	horn	" "	standing firm	good
"	"	" "	balancing	better
20	above horn	" "	standing firm	good
"	"	" "	balancing	better

Results balancing in all cases
 better than standing firm.

3/7/14.

Doyle and Kennedy Recording
#12 Bandaw Used
Recording Machine on floor.

Standing at 20' from horn, test
to determine best position to
speak voice.

Stand	Point	Person	Result
20'	15'	Doyle	good
20'	10'		best
20'	6'		good
20'	horn		fair
20'	own		fair
20'	15'	Kennedy	good
20'	10'		best
20'	6'		good
20'	horn		fair
20'	own		fair

8/7/14

Tests by Doyle & Kennedy
#3 Recorder used.

Recording Machine on floor.

Repetition of former test except
Balancing test included again.

Stand.	Arm	Person	Arm	Balance.
20'	15'	Doyle	good	better
20'	10'		better	best
20'	6'		good	better
20'	long		fair	good
20'	about him		fair	good
20	15'	Kennedy	good	better
20	10'		better	best
20	6'		good	better
20	long		fair	good
20	about him		fair	good

3/24/44.

Data from Sluick's.

A standard recorder should have mica diaphragm from .004" to .005" thick with 2 rubber gaskets, each $\frac{1}{32}$ " thick. The gaskets must conform to the recorder head and align perfectly. Diaphragm must be aligned with gaskets. Then held firmly and temporarily fastened with spacers, about 3 of each. Then released and was run all around so as to make a perfect seal.

Needle arm is to be cut from sheet aluminum about .007" thick and should measure from edge of recorder, diametrically to opposite edge of hole (about $\frac{1}{16}$ "). A piece of the above sheet aluminum about $\frac{1}{16}$ " x $\frac{1}{16}$ " is bent over a piece of .040" wire, and by pliers & vise neatly made into η shape.

RECORDERS.

#1	Standard	.0048 diaphragm	.80
#2	"	.0047	.80
#3	"	.0048 X	.70
#4	"	.0050	.85
#5	"	.0088 X	.65
#6	"	.0045 X	
#7	"	.004	.80
#8	"	.004 X	
#9	"	.0055 X	.65
#10	"	.004	.80

**Notebook Series -- Notebooks by Edison and Other Experimenters
Recorder and Recording Experiments -- A. M. Kennedy Books
Notebook, N-14-08-21**

This notebook was used by Absalom M. Kennedy during September 1914-March 1915 as a daily record of experiments and tests with phonograph recorders and reproducers. The record is continued in N-15-03-17. The tests involve various recording heads, arms, and diaphragms; gaskets; and speaking tubes. Also included are tests of machines to reproduce cylinder records from disc masters. Some of the experimental recorders were sent to the recording studio for testing, with the results reported back to Kennedy. The entries also describe other work by Kennedy, including experiments on film cements and cellulose mixtures for motion pictures, which are related to experiments in N-14-01-01.3 and N-14-01-12, Notebooks by Other Experimenters—Kinetophone and Kinetoscope Experiments. Also mentioned are meetings with Leonard W. McChesney and other employees in regard to "The Birth of the Telephone," a kinetophone film about Alexander Graham Bell. Kennedy's notes often mention Edison's own involvement in the phonograph experiments, including his opinions and suggestions about particular recordings or masters. Other individuals involved in the work include Clarence B. Hayes, William H. Meadowcroft, Walter H. Miller, Sherwood T. (Sam) Moore, William F. Nehr, George J. Werner, and an employee named Finlayson (possibly William F. Finlayson, who worked for Edison in 1903). A two-page note from Kennedy to Miller Reese Hutchison, with Edison marginalia, has been inserted into the book. The front cover is labeled "Daily Record of Recording Experiments" in ink and "A.M. Kennedy" and "Cement" in pencil. The pages are unnumbered, and several pages have been removed from the book. Approximately 140 pages have been used.

Sept. 21, 1914.

Stretching recording diaphragm of
Cellulose Acetate + 50% camphor. .0015"
thick by wetting with methyl
alcohol, pulling tight and allowing
to dry. Stretch good and tight.
George is building up a recorder
with this.

Tried another with cellulose
acetate diaphragm .0015" thick stretch
by wetting with water as
suggested by Mr. Edison. The
water did not expand the
diaphragm sufficient to
stretch.

Tried putting diaphragm as
above in boiling water. Turned
opaque & translucent and
white and stretched on cooling,
apparently not as much as
by the alcohol method above
however.

Made several piano records with
stretched diaphragms which

9/11/14 contd

George Mervin had put up.
As piping records these were
good but did not exhibit any of
the unusual qualities as
described by Mr. Edison.

Played for Mr. Edison records
showing recording from Disc
Cyl. Master to Cylinder Master.
He said these were good and to
go ahead with it, that
Hays would select the records
and Moore would furnish
special smooth sub-masters if
necessary. Showed him also
Piano records with stretched
records. He said these were
about as good as ordinary
records would do but not
the unusual results he was
looking for. To go ahead and
get these better results.

Sept. 28, 1914.

Made solution of celluloid film in acetone. Mixed with this a solution of shellac in alcohol. Poured this over a glass plate. Found that on drying the center turned white and in ridges while the edges remained transparent. Probably due to the fact that at the edges both acetone and alcohol evaporated nearly evenly while in the center, on account of slower evaporation, the acetone evaporated first, leaving the alcohol to absorb a little moisture before evaporating and turning both celluloid and shellac white.

Had difficulty in stripping film from glass. Found that by moistening film with alcohol and rubbing over with a dampened rag or by dampening with solution of

9/17/14

80% alcohol + 20% water, the
film easily stripped from the
glass.

Made up for George Nernst
an aluminum ring - 1 1/2" external
and 1 1/8" internal diameter x .010"
to try and keep his diaphragms
from being too sensitive.

George Nernst made photo tests
with several records and
with Dp (below microscope) in
Bass got one to show ring of
25 seconds.

Made up diaphragm with
two arms



This proved less sensitive than
with only one arm.

Sept 23-1914.

Curious change of tension of diaphragm

Norman was working on two recorders, one with boys' diaphragm stretched by cold - the other stretched by partial solvent alcohol yesterday afternoon & left them on his bench.

On examining them this morning both were loose and flabby. After handling a few minutes the alcohol stretched one tightened up O.K. The other tightened on heating the head.

Evidently both had been stretched to their elastic limit on the warm afternoon previous and were flabby on this cool morning.

It will be necessary to hold some at unvariable temperature for these diaphragms to be practical.

9/23/4. contd

Tried dissolving shellac in acetone. Difficult cold. Dissolves hot.

Made mixture hot shellac in acetone solution and added to solution regular celluloid film in acetone. Poured on glass. Center turns white & opaque.

Unsuitable for diaphragm purposes. Would probably be a suitable mixture for dead surface mirrors.

Made solution of Acetyl Cellulose Cotton in Chloroform. Dried rapidly but with whitish patches in center. This film seems to be good and tough. Is not smooth enough however. Will have to make them smoother probably by filtering the solutions and seeing that a level even solution is on the glass plate and that it dries rapidly.

9/23/14.

Made solution of Acetyl
Cellulose Cotton in Acetylacetic
tetrachloride. This dries to an
exceedingly clean tough film.
As before the film is rough
and I must learn to make
them smooth.

Now taking pictures for
M.P.A. for some people from
Mobile.

9/24/14.

Made 6-disc to cylinder records.
2 trials - 3 masters.

Revised reproducing machine.

9/28/14.

Made solution of gum sandarac in acetone and added celluloid film. This mixture will not do for diaphragms as it is too brittle to strip from glass readily. It would make a good flat coat varnish as it dries with a good dull finish and on glass is hard and resists rubbing.

Added to this solution small amount of castor oil. Result N. G. Film stays soft & adheres to separate. Makes a waxy like film.

9/29/4.

Tested out records made 9/24/4.
They proved conclusively

- ① That the unreproduced record is better than one which has had the master reproduced.
② That the best combination for records made was
- | | | |
|-------------|-----|---|
| Reproducer | #1. | } |
| Quadrant | #2 | |
| Reading Arm | #5 | |
| Records | #2 | |
- Gave best results.

Made up solution of acetyl cellulose in acetylene tetrachloride and of gum sandarac in acetylene tetrachloride.

Got two pieces of polished plate glass about 30" x 20" x 1/8" & levelled one of them. Paired following rotations to produce films for trial.

- ① Acetyl Cellulose in acetylene tetrachloride
② Same with addition of equal amount of solution gum sandarac

in acetylene tetrachloride.

Trued out new stretched-diaphragm
with Geo. Namer. Results seem to
be good on piano.

RECORD FOR W.E.CO.
BY MR. HUTCHISON.

Made record of reading from
book by Mrs. Hutchinson for
Telephone reproduction by the
Kinetophone. Made two
trials on master.

① Reader #10
Horn #3

② Reader #10
Horn - regular Kinetophone Recording.

11/4/14.

Experiment quality of records
using -

① Retrogen #1
Discern #

Experiments on
Talcum Cements

- #1 Equal parts of Methyl Alcohol,
Amyl Acetate, Benzole
and Acetone with about
15% Emphor.
-

#1 Sent to Recording Dept.

#2 Sent to Recording Dept. 7/5/50
Tents 3/10/51 with 1 meter diam. cone
to piano for holding. Big, natural
tone. Also small notes were but
go to pieces in low cords.

#3 Sent to Recording Dept.

12/8/52.

Stretched Diaphragm
Records Heads sent to
Recording Dept.

#1 - 2" diam.
Diaphragm .0014 of pure
acetyl cellulose, dried from
acetylene tetrachloride. Stretched
by freezing.

#2 - 2" diam.
Diaphragm .001 of pure
acetyl cellulose, dried from
acetylene tetrachloride. Stretched
by wetting with 75% methyl
alcohol + 25% water & allowing
to dry.

#3 - 2" diam.
Diaphragm .003 of pure
acetyl cellulose, dried from
acetylene tetrachloride. Stretched
by freezing.

#4 sent to Recording Dept

#5 sent to Recording Dept

#6 sent to Recording Dept

#4 - 2" diam.

Diaphragm 0014 of pure
acetyl cellulose dried from
acetyl. tetrachloride. Stretched
by freezing.

#5 - 2" diam.

Diaphragm 001 of pure
acetyl cellulose dried from
 $\text{C}_2\text{H}_5\text{Cl}_4$. Stretched by
freezing.

#6 - 2" diam.

Diaphragm 00135 of pure
acetyl cellulose dried from
 $\text{C}_2\text{H}_5\text{Cl}_4$. Stretched by
freezing.

Made one
9/1/15
9/5/15

#4 - Set up with $\frac{7}{8}$ " domed aluminum center, .006", regular arm, .038" sapphire, flat ball.
Feeder 9/10/15 - Kusto. Arm close to piece.
Little lined. Heard single notes & high crows, blasts on low crows. Quality very good.

Made one
9/1/15
9/5/15

#10 - Set up with $\frac{7}{8}$ " domed aluminum center, .004" - flattened arm, .038" sapphire, flat ball.
Sounds too fully tubing - not clear - does not differentiate notes.
Feeder 9/10/15. Same as above but not quite so good in holding a quality sound.

Reorders Made and Kept

Made one
9/17/15
See photo

#4 - Diaphragm of cellulose acetate .001" - dried from C_2H_5Cl solution. Stretched by freezing with CO_2 . With $\frac{7}{8}$ " aluminum domed center. Stretched on 2" head. .038" sapphire, set standard.

Made one
9/17/15
See photo

#10 - Diaphragm of cellulose acetate .0015" - dried from C_2H_5Cl sol. 2" head. Stretched by freezing with CO_2 (use $\frac{7}{8}$ " aluminum domed center). .038" sapphire set standard except flattened arm.

#12 -

Diaphragm of cellulose acetate .0015" - dried from C_2H_5Cl sol. 2" head. Stretched by freezing with mixture equal parts CH_3OH and H_2O following to dry. With $\frac{7}{8}$ " aluminum center domed. .038" sapphire set standard.

#2* - Set up with $\frac{1}{16}$ domed center,
.004" aluminum. Flattened arm,
.038" sapphire.

#3

Broken later
see later

#70

Broken
see later

#2 Sent to Alan St Studio

Mod. 2/9/55

#2* - 2" head. Diaphragm .001" thick
of cellulose acetate dried from
solution in C_2H_5Cl . Stripped
by wetting with equal parts
 $CH_3COH + H_2O$ & drying out.
 $\frac{1}{8}$ " domed aluminum center part
on - .038" needle in flattened arm.
(Did not have failed ball to
complete)

#3 - 2" head. Diaphragm .0035" thick
of cellulose acetate & 50% gum
sandara dissolved in C_2H_5Cl .
Stripped by wetting with 1 part
 CH_3COH to 2 parts H_2O and
drying out.

#20 - 2" head. Diaphragm .003" thick
of cellulose acetate dried
from benzene solution,
stripped by wetting with
equal parts $CH_3COH + H_2O$.

#21* Same as above except
released by wetting with solution
1 part CH_3COH to 2 parts H_2O .

Mod. 2/9/55

Experiments with Cellulose Mixtures.

- ① Tried to dissolve Gum Dammar in C_2H_5Cl . Will dissolve, but slowly by heating. Used 50% of this with 50% heavy solution of cellulose acetate in C_2H_5Cl .

Film unsatisfactory. Much stretch & bend slowly when warm (about 70°) but even at this temperature would crack when quickly bent. When cooled to about 40° would crack very easily.

- ② Film made as above but with about 5% gum dammar solution. Dried with "flat" - no glass surface. Better than ① but still feels soft & sticky to touch. Do not think will prove satisfactory.

- ③ Tried to dissolve Gum Sandarac in C_2H_5Cl . Very difficult even when hot. Made mixture of

Such solution, estimated at 5% gum
with 95% solution cellulose acetate
in C₂H₅Cl. Film from this looks
promising. It cracks a little more than
pure cellulose acetate when suddenly
bent but is hard & springy. Set up
3 Recorder head with this.
Makes good flat surface varnish

- (14) Tried to dissolve Gum Sandarac
in Amyl Acetate. Dissolves in any
quantity but rather slowly. Made
solution 50% above with 50%
celluloid film in Amyl acetate. Have
an aligabred surface film, a
little flat but which film adhered
to the glass plate so strongly
that it was difficult to remove
even after softening with
acetone & water. Film also
turned white in spots with
stripping. Does not look good
for diaphragm purposes.

- (15) Dissolved celluloid film in
Amyl Acetate. Dries with slight
ridges from glass plate but

looks good for diaphragm purposes.
strips easily.

#20 - Sent to Alden St. Studio.
 Nernst reports that disc record
 was made with this in
 comparison with regular records,
 but that master was broken in
 34 hrs.
no master prepared by Mr. Edison

#3 -

Disc Nernst
2/5/15
Ground
Rehearsal See Action

#41 - Sent to Alden St. Studio

Made over
2/9/15

Records 1/4/15

#20 - 2" head. Diaphragm .003 thick
 of celluloid film from solution
 in Amyl Acetate. Stretched
 by wetting with 2 parts H₂O
 to 1 part (CH₃)₂CO.

#3 - 2" head. Diaphragm .001 thick
 of celluloid film dried from
 solution in Amyl Acetate.
 Stretched by ailing head where
 touches diaphragm &
 wetting diaphragm with
 2 parts (CH₃)₂CO + 3 parts H₂O

#41 - 2" head. Diaphragm .001 thick
 of celluloid film dried from
 solution in Amyl Acetate.
 Stretched by ailing head where
 touches diaphragm & wetting
 diaphragm with 2 parts (CH₃)₂CO
 + 3 parts H₂O & stretching
 when wet and allowing to
 dry.

Made over
2/9/15

Made on 10/17/5
See later

#10 - Set up with $3/16$ flat
dome .006" thick aluminum,
regular arm, .028" sapphire,
195 amp. wax & resin used to
fasten.
Parts with too much tubing,
& little blast. Deflection not
clear.

#11 - Sent to Alden pt Studio

Made on 10/17/5
See later.

#12 - Regular 2" recorder head.
Diaphragm .001" of regular
film stock dried from solution
in amyl acetate. Stretched by
wetting with 5 parts H_2O + 1 part
 $(CH_3)_2CO$ & pulled tight and
allowed to dry. Seems good
and tight. SET - CP -

#22 - Regular 2" recorder head.
Diaphragm .002" of regular
film stock dried from
solution in amyl acetate. Stretched
by wetting with equal parts
 H_2O + NH_3OH & pulled tight
and allowed to dry. Seems
good & tight.

Experiment in Recording

- ① Mr. Edison wished to experiment on recording particularly for grand opera records and especially for those with more than one voice.

In former records he detected that the singers do not keep together either in time or pitch and assigned as a reason that each one heard the other and if the second one was off - even slightly in time or pitch, the first would follow him and the result be more or less confusion. He therefore tried an experiment in which singing regularly he detected "beats" in this and in these voices due to their not being in exactly the same pitch. He then had one of the voices sing in a horn which ear tubes to the other "voices" ears. In this way the "beats" were eliminated.

He suggested that the same result may be accomplished with telephones in which a leader sings into a transmitter and the recording voices had receivers on their ears.

At first the telephones were so loud as to be annoying to the singers. When they were reduced in loudness, the singers still complained that they were confusing even though they could not hear distinctly. This was deemed a failure on account of the telephones not being clear enough.

Speaking tubes were then rigged up so that a leader could sing in a horn and be followed by the recording singers.

On trial with out these tubes contrasted with a trial with the tubes, the latter was found to hold the singers together better in time (two trials), the record showing quieter, cleaner, happier, and that the sound directly in

Their ears without outside
interference held them together
tightly.

Another experiment was tried
at the same time in which
the ear tubes were attached to a
reproduced on disc phonograph
on which was a ~~instrumental~~
record of Quartette from Paglietta.
This proved confusing to the
singers and the record deemed a
failure.

#13 Sent to Recording Studio
1/27/15
"Rough Cut and too full tone"
(Res. Studio)
2/1/15

Residue 1/15
See later

#14 Sent to Recording Studio
1/29/15

"Peak-cut fair cut"
(Res. Studio)
2/1/15

#15 Sent to Recording Studio
1/29/15

"Too full - Rough Cut"
(Res. Studio)
2/1/15

Destroyed & made over with
heated diaphragm see later

1/27/15
#23 - Head $1\frac{1}{4}$ " external \times $1\frac{1}{4}$ " internal
Diameter. With film of nitro cellulose
.003 thick dried from solution
of amyl acetate. Stripped by
water which equal parts
(CH₃)₂CO & H₂O.

#24 - Head $1\frac{1}{4}$ " external \times $1\frac{1}{4}$ " internal
diameter. With film of cellulose
(found). .005" thick. Stripped by
washing with equal parts (CH₃)₂CO
and H₂O, spilling, tight, clamping,
and allowing to dry.

#25 - Head, aluminum, 2" external,
 $1\frac{1}{4}$ " internal diameter. Film of
nitro cellulose (from stock) dried
from solution in amyl acetate,
.002" thick. Stripped by washing
with equal parts H₂O & (CH₃)₂CO,
pulling tight, clamping and
allowing to dry.

Sent to Res. Studio
1/29/15

#26 Pints to Recording Studio
1/29/15

"Too full - Rough Cut."
(Rec. Studio)

Made over 2/9/15.
Sa later

#27 Queen Geo Meyer 2/5/15
Tested 2/10/15 until limits then close to pins on
holding test. Makes single note. Black
on cords. Fair quality.

#28 Queen Geo Meyer 2/5/15
Tested 2/10/15 until limits then close to pins on
holding test. Not so good as #27 above
in holding or on quality.

Made over 2/10/15

#26 - Aluminum head - 2" external -
1 1/4" internal diameter. Diaphragm
of film stock dissolved in Amyl
acetate. Dried - .002" thick. Put
on 1/4" settling with equal parts
(CH₃)₂CO & H₂O, stretching, clamping
and allowing to dry.

2/1/15
#27 - Brass head - 2" external, 1 1/2" internal
diameter. Diaphragm of film
stock dissolved in Amyl acetate
and dried - .002" thick. Lightened by
settling with equal parts (CH₃)₂CO
& H₂O, stretching, clamping and
allowing to dry.

#28 - Brass head - 2" external, 1 1/2" internal
diameter. Diaphragm of film stock
dissolved in Amyl acetate & 2%
acetone dried. .002" thick. Lightened
by settling with equal parts (CH₃)₂CO
& H₂O & stretching, clamping &
allowing to dry.

1/22/15.

Made up same four ear tubes connected to longer brass tube to be more convenient for the singers.

Hayes made up quartette consisting of Miss Rensen, Miss Sales, Mr. Meadowcroft and himself with Miss Ingrid at the Piano.

Made trial of "Gloria" without and with the above tubes.

The records in both cases were poor, whether the fault was due to the singers or the recording, could not determine. The result was not conclusive although as shown on former trial it seemed that this quartette kept better time - but is kept together better with the tubes than without.

Tried "at the Mill Maggie" with similar results. Record did not show up as good as previous record made of same quartette singing "Rigolotto". Result as before - inconclusive.

Made solo record of Miss A. Rensen singing from "Traviata".

Record good. This little girl of
about 12 has a good clear even
voice, good interpretation, and
puts life into her song. She will
probably develop into a good
singer and actress.

Am not satisfied with the
recording work which has been
done. Think that part of our trouble
at least was with the technical
recording. Will try and have
recorder and machine 2 hours up
and in good shape before the
next record is taken.

#29 -

Harped while being
cut up. See later

#30 -

Queen Geo Nern 2/5/15 -
Tested 2/10/15 with French horn & brass
to piano for backing - Sounds
dead. Does not carry any of
piano. Nern stated quality fair

2/3/15.
#29 - Regular Brass Head, 2" External,
1 1/2" internal diameters,
Diaphragm stock celluloid (found)
005" thick. Stretched by wetting
with equal parts $(CH_3)_2CO$ & H_2O ,
allowing to swell, tightening,
clamping & allowing to dry.

~~5/4 opposite~~

#30 - Regular Brass Head - 2" External,
1 1/2" Internal Diameters.
Diaphragm, celluloid acetate
dried from solution in
acetyl chloride, 0025"
thick. Tightened by wetting
with equal parts $(CH_3)_2CO$ & H_2O ,
allowing this to soften film,
stretching, clamping & allowing
to dry & tighten.

Made and 7/14 See later

#29

Pick up (Aval) with $\frac{1}{16}$ aluminum dome
.006 - regular arm - 038" x .125" sapphire,
flat-top yellow ball - (2/2/15) -
Green No. 1000 9/5/15

#29 - Regular 2" Brass Head
2" External - 1 1/2" Internal Diameter.
Diaphragm of Stock Celluloid (found)
.005" thick. Stretched by freezing
head with CO₂ - clamping and
allowing head to expand on
warming.

Made and
9/17/14 See later

2/5/15.

As Mr. Meadcroft complained last time that the horns did not sound loud enough through the tubes, had larger tubing between cross members and ear tubes proper.

Had Misses (Soprano, Soprano) Yates (alto) and Ingrid (Pianist) with Hayes to sing, two of Carmen.

Had trouble with recording and reproducing machines at first.

Made 5 trials of Carmen without tubes until we got a fairly good one.

Tried tube system, Miss Ingrid singing soprano in business phono tube horn as lead.

Result showed that trio kept together O.K. as to time but the soprano was badly off on pitch - about 1/2 tone flat.

Next gave Miss Ingrid another horn, called Japanese in one. Result better than before but still off pitch.

Then had Miss Ingrid play the air as well as accompaniment.

on the piano during hour so this
moves just as leader. Result
better than former but still not
so good as without tubes, as
regards pitch. In Lympo however
they seemed to stay together better
with the tubes than without.
Will try pads on tubes and
telephones with time.

Q make 2/15/5 see later.

#3 Given to Hayes 2/9/15.

Tested Out 2/10/15. Gives

a record which is thin &

sharp. CONTRAST WITH FORMER
reports. Punctured in reassembly.

2/9/15

#3 - Regular Brass Head, 2" external,
1 1/2" internal diameters. Diaphragm
of white celluloid, purchased from
The Celluloid Co of Newark, 1955
thick. Stretched by freezing the
head and at the same time blowing
on the diaphragm to heat and
moisten it.
(Shooled Very Tight)

2/9/15. ✓

Had Tim layon make up new master reproducers for 10 days. First one made with counterweight did not track well. Changed it by cutting the weight in half, and adding $\frac{1}{8}$ " to the short end of the replan disc lever. Also put a 0.40" lifel in place of the diamond. Days says it reproduces fine.

Tixed up telephones with induction coil for test of quartette tomorrow

Attempted to make Ear Pads to fit the ear tubes. These could be made to fit but were not sound proof. It seems a very difficult job to make sound proof ear pads.

Made up #3 Record; gave to Hayes to Test Out. See previous page.

8/10/15. ✓

Got Norm's skays over and tested out stretched records for hoedding with the following results:

- A - Tick. Unnatural. Not very sensitive.
- ✓ - Big Tone. Holds well on single low bass notes. Goes all the way on hand full of cords.
- 28 - Thinner than # 7 and doesn't hold as well.
- 27 - Holds single notes well. Elastic on cords.
- 4A - Good quality on high notes. Elastic on low strong cords.

✓
10- Good quality on high & single notes. Blasts on cords. Found that the needle was loose & tightened. Results heard better.

112- Blasts work on single notes and on cords. Dec. quality on high notes.

#80- Soft. burst. Halbs single notes ^{high} & cords. Blasts only on low cords. Fair quality.

#29- Some loose from diaphragm.

In previous test, Phonophone recording horn was used close in spring grand piano. Notes into #1's 44, 10 with small horn.

#10 seems rather flat & dead. Does not carry the ring of the piano. Better pronounced for quality.

#4A. Quality pretty good.
not very loud.

afternoon

Misses Rensen, Fatis and Ingrid
came out.

Tested Misses Rensen (Napier) Fatis,
Otto) & Hayes (Kuro) singing Japanese.
Made good record without
telephone.

Used head telephones connected
to M.C. transmitt through
induction coil on fingers. Miss
R said that the telephones were
less annoying than ear tubes.

Records with telephones (3) showed
distinctly more in pitch than the
records without. In time they were
perhaps a little closer together with
than without telephones.

These results were confirmed by
Chas. Edison.

Made tests of before mentioned
pings pingent arpeggios & scales
without telephones.

They kept better together in
pitch without than with the
Hulus. This was confirmed by
Chas. Edison. ✓

Tested #4 & #10 Records with
voice recording. #4 was
slightly buried. Excellent quality.
#10 had squeaks, was more
buried and not so good.

2/11/15

With Demonstrators all day

2/12/15

With Demonstrators all day

2/13/15

Correct Examination Papers.

2/15/15

Write Report

Made up acetyl cellulose solution
with 90% acetyl tetrachloride, 10% acetone
& flowed on glass for film.

Turned up brass plate for
stretching films when stretching

Stretching recorder #25 of
100% acetyl cellulose, heated. Stretches
very tight.

#25 - Given Re-reading Apr. 2/7/15.

#3 - Given M. Hayes 2/7/15 to set up.

Tested out 2/22/15. "Not as
loud as standard. - Beats
slightly on loud chords. Quality
sharper than #4.

2/15/15
#25 - Aluminum head 2" external,
1 1/2" internal diameters. Diaphragm
of cellulose acetate from acetone
nitrate, .0025" thick. Stretched
by applying heater source of brass to
diaphragm, pulling tight & damping.
Seems to stretch very tight in this
way.

2/16/15
#3 - Brass head - 2" external, 1 1/2" internal
diameters. Diaphragm of white stock
cellulose, purchased from The Celluloid Co.
originally .0055" thick. Rubbed down
with sand paper to .0045" thick. Stretched
by laying piece of brass heated to
about 200° F on it, pulling tight and
damping. Seems very tight.

2/16/15.

Stripped film of yesterday. Strips easily by softening with mixture acetone & water. Curled though. Corrected this by wetting with same solution on reverse side.

Made solution of acetyl cellulose in acetylene tetrachloride 80% and amyl acetate 20%. This makes a clearer and more perfect solution than acetylene tetrachloride alone as all of the cotton seems to dissolve in it while strings of undissolved cotton almost always remain in acetylene tetrachloride alone. Added too much cotton so that solution was too thick & tried addition of about 10% acetone and afterwards 10% C_6H_6 to solution. The cotton would not dissolve in this solution and mixture was thrown away.

Made new mixture of 21 parts Acetylene tetrachloride and 4 parts Amyl Acetate. Added acetyl cellulose to this and heated over radiator.

Heated alone, strained & poured on glass for film. Seems better than I made day stretching records.

2/17/14.

Stripped film made yesterday
and dried overnight. Is too thin.

Packed records made to be sent
to Mr. Miller and to Nernst.

Had Ruhs make new punch and
some longer fellow had arm screws
for Hayes.

Saw about Demonstrators working.
Stretched diaphragms in new
records.

Made up solution of acetyl
cellulose in C_2H_5Cl - heated
& strained - cleaned glass & poured.

#26 - Given Recording Dept. 8/17/15

#23 Given Recording Dept. 2/17/15

#24 Given Recording Dept. 2/17/14.

2/16/15.
#26 - Aluminum head - 2" external, 1 1/2" internal diameters. Diaphragm of old Cellulose Acetate film, left by German, .004" thick. Stretched by laying on brass heated to about 212° F. stretching tight, clamping and allowing to cool. Seems good and tight.

#23 - Brass head - 1 1/2" external, 1 1/4" internal diameters. Diaphragm of old material, left by German & marked "1/2 camphor (from cellulose acetate from burning test) - .0035" thick. Stretched by laying on cylinder of brass, heated to about 212° F. stretching tight, clamping and allowing to cool. Seems good and tight.

#24 - Same as #23 except diaphragm .004" thick.

#28 - Given H. Hayes 2/17/15 with
arm etc. complete.
Tested 2/23/15. pt test - "Racks"
met - "weaker than standard"
- "Quality Fair."
Mid Test - "not sensitive" - "damped
note".

Made gun
2/1/15

#2 - Given Geo. Nerned 2/17/15 with
arm etc. complete.
Tested 2/23/15. "Little weaker
than standard - Beats on low
chords - Fair quality".

Made gun
2/1/15

2/10/15
#28 - Brass Head - 2" external - 1 1/2" internal
diameters. Diaphragm of old
material left by Rierman, according
to pile & burning consists of
cellulose acetate & camphor
.004" thick. Stretched by putting
on cylinder of brass heated just
above 212° - tightening & clamping.
Seems good & tight.

Made gun
2/1/15

2/17/15
#2 - Brass Head - 2" external - 1 1/2" internal
diameters. Diaphragm of cellulose
acetate from solution in C₂H₅Cl
.003" thick. Stretched by laying
on heated brass cylinder, about
212° - tightening & clamping.
Seems good & tight.

Made gun
2/1/15

#29 Given Geo Hermal 2/7/15
Tester 2/23/15. Neck - 1/2 lbs. wet.
Quality not good.

Made and
2/24/15

#10 Given Geo Hermal 2/7/15

#22 Given Geo Hermal 2/7/15

2/7/15
#29 - Brass Head - 2" External, 1 1/2" Internal
diameters. Diaphragm of cellulose
acetate from solution in $\text{C}_2\text{H}_5\text{Cl}$.
Stretched by applying cylinder of
brass heated just above 212°, pulling
tight & clamping. Seems good & tight.

Made and
2/24/15

#10 - Brass Head - 2" External, 1 1/2" Internal
diameters. Diaphragm (old some of
Burman's). Test show cellulose acetate
with probable camphor. .0035"
Stretched by applying cylinder of brass
heated above 212°, pulling tight
and clamping. Seems good and
tight.

#2A - Brass Head - 2" External, 1 1/2" Internal
diameters. Diaphragm of Cellulose
Acetate from solution in $\text{C}_2\text{H}_5\text{Cl}$.
.0025". Stretched by applying
heated cylinder of brass, above
212°, pulling tight & clamping.
Seems to be good and tight.

Made over
2/1/15

- #31 - Given Geo Nernst 2/17/15
Tested 2/22/15. - Plots on lower
chords - Heavier than standard.
- Quality fair.

- #12 - Given Geo Nernst 2/17/15
Tested 2/22/15. - Plots on
lower chords - Quality good.
2d test - Quality not as good as #4A.

Made over
2/22/15
See later

- #30 - Given Geo Nernst 2/18/15
Tested 2/22/15. - Plots on
lower chords - Little weaker than
standard - Quality better than #31
- Clean
2d test - Excellent Quality - Distinguishes
with better than #4A - Sounds out
pretty good.

Made over 2/22/15

- 2/17/15
#31 - Brass Head - 2" External, 1 1/2" Internal
diameters. Diaphragm of cellulose
acetate from sol. in C_2H_5Cl -
.0023". Stretched by applying brass
cylinder heated above 215°, pulling
tight & clamping. Seems good
& tight.

- Made over
2/27/15
#12 - Brass Head - 2" External - 1 1/2" Internal
diameters. Diaphragm of cellulose
acetate from solution in C_2H_5Cl
.002". Stretched by applying brass
cylinder heated above 215°, pulling
tight and clamping. Seems good
& tight.

- Made over 2/27/15
#30 - Brass Head - 2" External - 1 1/2" Internal
diameters. Diaphragm of cellulose
acetate from solution in C_2H_5Cl
.0015". Stretched by applying
brass cylinder heated above 212°,
pulling tight and clamping.
Seems good and tight.

Given Geo. menner 2/18/15-
 #4A - Tested 2/23/15 - Fairly hard - clear.
 Blasts only slightly on low chords -
 Quality good - clear.
 1st test - Good quality - Stands out
 well - bright.
 2d test - Fairly hard - fine - good

#27 Given Geo. menner 2/18/15-
 Tested 2/23/15 - Not as hard as
 standard - Blasts slightly on low
 chords. Quality fair - fine.

Made over 2/1/15

2/17/15-
 #4A - Brass Head - 2" External - 1 1/2" Internal
 Diameter, Diaphragm of (.002")
 Cellulose Acetate from solution
 in C_2H_5Cl , stretched by applying
 brass cylinder heated above 212°
 pulling tight and clamping. Seems
 good and tight.

#27 2/18/15-
 Brass Head - 2" External - 1 1/2" Internal
 Diameter, Diaphragm of cellulose
 acetate from solution in C_2H_5Cl ,
 .002".
 Stretched by applying cylinder of
 brass heated above 212°, pulling
 tight, clamping. Seems good &
 tight.

Made over 2/1/15

9/18/15.

Stripped film poured last afternoon.
Seems O.K.

Saw about demonstrators. They
not arrived at 10 am. Stinson only
one to teach. This looks useless to
take time on one.

Saw men about tests of recorders.

Got Records from Herder.

Made records of Vernon Dahart's
voice. This man is nice and even
but rather cheap of voice.

Taught Stinson for 15 min. Demonstrated
rest of afternoon.

9/19/15.

Taught Stinson part of morning.
Stretched Records.

Misses Rensen, Fates & Imgrid-
Messers. Duesinger (Violin) Bayle
(Tenor) came up for recording
experiment.

Used Jazmata, first regular,
second with telephones & led by
violin. Results inconclusive. Will
put up to Mr. Edison to decide.

Made another set, third regular,
fourth, with telephones led by
violin. Results again not conclusive.

In these songs were Miss Rensen
soprano, Miss Fates, alto, Hayes
tenor, Miss Imgrid, Piano, Mr.
Duesinger - Violin.

Made a fourth record 'Carmena'
as alone, regular, but with Bayle
as tenor and Hayes as Bass.

Will put records up to Mr. Edison
to get instructions for next
session.

#21. Given Gases 2/19/15.

#41 Given Gases 2/19/15.

2/19/15
#21 - Regular Brass/Lead 2" ex. - 1 1/2" Int.
Diameters. Diaphragm of cellulose
acetate from solution in C_2H_5Cl + 90%
stretched by applying brass cylinder
heated above 212°, pulling and
clamping. Seems not to have been
pulled as tight as former ones and
is not so tight. TRY * SEE EFFECT.

2/19/15
#41 - Regular Brass/Lead - 2" ex. - 1 1/2" Int.
Diameters. Diaphragm of Cellulose
acetate from solution in C_2H_5Cl + 90%
stretched by applying brass cylinder
heated to 212°, pulling tight and
clamping. Seems good and tight.

2/20/55.

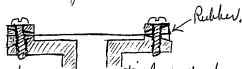
Got books, papers etc. from
studio - Straightened them up.
Got rid of accumulated memos
etc.

Saw Walter Miller on
stretched diaphragms. He
reports that Peano record
reported as good was
made with stretched
diaphragm.

Made up double quantity
of acetyl cellulose in
4oz CH_2Cl_2 + 4oz CH_2I_2 + CO
allowed for film.

9/10/5.
Took charge of new class of
Disc Demonstrators.
Repat.

Saw Mervin about testing out
stretched diaphragms.
Suggestion for stretched recorder.



As the screws are tightened the rubber
gaskets will first press the diaphragm
to cone shape and then cause it
to be forced outward and stretch
the diaphragm.

Stretched diaphragm in recorder

#32.

MVE pump
by this

#32 Delivered to Geo Herman 7/22/15.

Made out
of cell/s

~~Film cracked
by overstretching
wire being
up.~~

2/22/15.
#32 - Brass Head - 2" External - 1 1/2" Internal
Diameters. Film of cellulose
acetate from solution in 90%
C₂H₅Cl + 10% (C₂H₅)₂CO. 002".
Stretched by applying heated cylinder
of brass, pulling tight and clamping.
Seems good and tight.

9/28/15.
Stripped film of last night
looked after Demonstrator
tested out the following recordings
which had been set up by the Messrs.

Uro-Kinulophone Horn in
Grand Piano with top raised.
Test for holding. Using
Db. deep back 3 times followed
by ascending chords of Db, struck
fairly loud.

- Cylinder #1.
- #74 - Standard - Best quality -
Plots only on low chords.
 - #7 - Quite weaker than #74. Plots
on low chords - Fair quality.
 - #78 - Heels well. Messrs than standard
Quality very fine

Cylinder #2.
#31 - Blasts on low chords. Weaker
than standard. Quality fair.

#30 - Blasts on low chords. ~~Quite~~
weaker than standard. Quality
better than #31 - clear & crisp.

Cylinder #3.
#27 - Not as loud as standard. Blasts
slightly on low chords. Quality
fair. - Pull.

#4A - Fairly loud - clear - Blasts
only very slightly on low
notes. Quality good and
clear.

#3 - Not as loud as standard.
Blasts slightly on low chords. Quality
fairer than 4A

Cylinder #4.
#12 - ~~Sensitive~~ - Blasts on low
chords - quality good.

#79 - Weak - Needs work - Quality not good.

#75 - Big tone - Blacks on low chords

Cylinder #5.
Made by playing piano regular -
Chapin, Nocturne in Eb - regular
strength -

#74 (Standard) Loud but individual
notes damped down.

#78 - Weak - individual notes damped.

#4A - Fairly loud - full - good.

Cylinder #6
Piano force, a little loud in parts

#4A - Good quality - Slends out well -
bright

#19 - Quality not so good as LA

#30 Excellent quality - makes
individual notes stand out.

Turned up dies for and made
domes all afternoon - $\frac{1}{2}$ " - $\frac{7}{8}$ " - $\frac{1}{8}$ ".

8/24/15.

Made run #29 Recorder.
Ran about 15 sec Demonstrators.

Found needle in #29 as previously
used had very bad place on cutting
edge & turned it.

#29 - Tested 8/6/15 - Fan - Runs
low chords together - quality
fan

#32 - Tested 8/6/15
Heads fine. Tone a trifle
sharper than standard. Good
definition. Rings

#3 - Tested 8/6/15 - sharper than
standard. Rather dead - runs
nice together.

8/6/15.
#29 - Regular head 2" External - 1 1/2" Internal
diameters. Film .002" of
cellulose acetate from solution of
C₂H₅Cl. Struck by applying heated
cylinders of brass, just above 212° -
pulling tight and clamping.
Set up with dome 5/8" x .004" aluminum
regular arm & 038 sapphire

#32 - Regular head - 2" External - 1 1/2" Internal
diameters. Film .003" of
cellulose acetate from solution of
C₂H₅Cl. Struck by applying
heated cylinders of brass just
above 212° - pulling tight
& clamping. Set up with dome
5/8" x .004" aluminum, regular arm
& 038 sapphire

#3 - Same as before but set
up with dome 1/2" x .006"
aluminum, regular arm &
038 sapphire.

2/25/50-

With our Demonstrators all
day.

4/19/10

Nett Desa Demonstrations all morning.

Misses. Rensons, Inquid, Fates
ent.

Practised on Quartette from
Regalotto's

Made Cresc. & Quartette
from Regalotto.

#1 Romano leading

#2 Romano leading

#3 No leader.

Gave Ruth sketch for
Borden Repts., adj. Statute.

Nett Hammond - who
authorized taking Desa. Phono
to 5th Ave. Pres. Church Newark,
Ocelston.

9/27/15.
Examination of Diss Demonstrator
all day.

#18 - Tested 3/6/15. Plants badly
- Rotten - way back - dead

#27
Tested 3/6/15 - Back in horn
muffled - weak & runs
together.

7/27/15
#17 - Brass head - 2" External - 1/2" Internal
diameters. Diaphragm (same
as #15 - 3/7/15) of cellulose acetate
from solution in $\text{C}_2\text{H}_5\text{Cl}$ - .004"
thick. Stretched by applying
brass cylinders heated above
212°, pulling tight & clamping.
Seems good and tight. Set up
with 3/8" x .006" aluminum dome,
regular arm 2.038" x .125" nickel

3/1/15
#27 - Brass head - 2" External - 1/2" Internal
diameters. Diaphragm of vinyl
cellulose from solution in $\text{C}_2\text{H}_5\text{Cl}$
.0025" thick. Stretched by applying
brass cylinders heated above
212°, pulling tight and clamping.
Seems good and tight. Set up
with 3/8" x .006" aluminum dome,
regular arm 2.038" x .125" Baryphore

#18 - Tested 9/6/15. Blasts badly
- Rotten - way back - dead

#27
Tested 9/6/15 - Back in horn
muffled - weak & runs
together.

9/27/15
#17 - Brass head - 2" External - 1/2" Internal
diameters. Diaphragm (same
as #12 - 9/7/15) of cellulose acetate
from solution in C₂H₅Cl - .004"
thick. Stretched by applying
brass cylinder heated above
212°, pulling tight & clamping.
Seems good and tight. Set up
with 5/8" x .006" aluminum dome,
regular arm 3/32" x .125" needle

9/1/15
#27 - Brass head - 2" External - 1/2" Internal
diameters. Diaphragm of Cellulose
acetate from solution in C₂H₅Cl
.0025" thick. Stretched by applying
brass cylinder heated above
212°, pulling tight and clamping.
Seems good and tight. Set up
with 5/8" x .006" aluminum dome,
regular arm 3/32" x .125" sapphire

#1 - Testes 3/4/5 -
Plants slightly on low chond.
specie. Slightly fan

#31 - Testes 3/6/5 -

Plants from parts touching.
natural quality - but back in
horn - high notes plummy.

Late (note raised) Plants
only on lower notes. Quality
natural but back in horn - does
not stand out, high notes plummy
like banjo.

3/1/5 -

#2 - Brass head. 2" External - 1 1/2" Internal
diameters. Diaphragm (same as 7/6/5)
of acetyl cellulose from solution $C_2H_2Cl_2$
.003" thick. Stretched by laying on
brass cylinder heated above 212°,
tightening & clamping. Seems good &
tight. Set up with dome $3/8 \times .006$ "
aluminum, regular arm. .038 \times .125"
sapphire.

#31 - Brass head - 2" External - 1 1/2" Internal
diameters. Diaphragm (same as 7/7/5)
of cellulose acetate from solution
of $C_2H_2Cl_2$.0023". Stretched by
applying brass cylinder heated
above 212° pulling tight & clamping.
Seems good and tight.
Set up with aluminum dome
 $3/8 \times .006$ " - sapphire .038 \times .125"
regular arm.

Tested 3/6/15 - Heads well - tone more
full than 32 - does not ring
quite so much but tone is
natural - little plummy - louder
than 74 (Standard).

Tested 3/2/15
Quality fair.
Does not blast with horns 9 & 10.
Somewhat muffled and like
other acetyl cellulose recorders
lacks definition.

Tested 3/6/15 -
Horns fine - single notes - blasts
on low chords - quality little
plummy fair.

3/1/15
#28. Brass Head. 2" External. 1 1/2" Internal
diameters. Diaphragm (Same as 74/15)
of aluminum, left by German
probably cellulose acetate & camphor
.004" thick. Struck by putting
on brass cylinder heated above
212°, tightening & clamping.
Seems good and tight.
Set up with aluminum dome
5/8" x .006" - Regular arm -
sapphire .038" x .125"

3/2/15
#33. Special adjustable head as 3/2/15.
with triangular rubber gaskets.
With diaphragm of cellulose
acetate from solution in C₂H₄
Cl₄ - .0025" thick. Struck
by tightening screws of
clamping ring. Seems good
& tight.
Set up with aluminum
dome 5/8" x .006" - regular arm,
sapphire .038" x .125"

8/1/15.

Put up recorders as shown.
Graded examination papers.
Put diaphragm in & rubber gasket
adjustable stretched peardin

3/4/15.
Finished grading Diamond Disc
Examination papers.

Put up adjustable recorder &
tied up on piano recording
with horns 10 & 9 respectively.

This recorder seems to hold piano
with both horns when done in
even on heavy chords.

Tightening up the diaphragm
does not seem to change its
characteristics.

8/2/15.
Tested out #33 Recorder. This
gives with piano fair quality but
is still somewhat muffled and lacks
definition.

Made up new domes and arms.

Looked over score of "Quartette from
Rigoletto" - marked out portions where
emphasized as melody parts on
recording.

Report from Walter Miller on recorders
sent over as follows

#26 - Too thin. Not as good as #67.

#25 - Explosive Quack

#67 - Standard -

#67 - Standard

#23 - Muffled & Back

#24 - Too weak.

Got heads #s 34 to 35.

Made over 3/4/15

Tested 3/4/15. Blasts on heavy chords such as horn #9. Is too full-bulby and muffed.

It is evident that this material is too thin & not quite enough of response.

Made over 3/4/15

Tested 3/4/15.

① - Works fine with all horns and any way can be played. Excellent definition. Quality metallic.

② - Does everything. Quality good. ~~Little~~ ^{Little} weak. Excellent definition.

③ - Does everything. Quality good. Excellent definition.

3/4/15.

#34 - Special adjustable head as 3/2 1/5 with triangular rubber gaskets. With diaphragm of acetyl cellulose .001" from solution in $C_2H_2Cl_4$. Stretched by tightening screws of clamping ring. Has little resistance.

Sit up with aluminum dome $5/8" \times .006"$ - regular arm, Sapphire .038" x .125".

#35 - Special adjustable head as 3/2 1/5 - with triangular sectioned rubber gaskets. With diaphragm of hard bronze .0025" thick. Stretched by tightening clamping rings. Is very tight & springs.

③ Same disc 3/16 1/1006

Made over 3/4/15

Sit up ① regular arm - no dome or center piece. Sapphire .038" x .125".

② With disc of aluminum center $5/8" \times .006"$ & same arm & sapphire as above.

8/4/15.
Set up and tested #34, 35
with results as shown.

CORRODS Test up #34. Found
edges of .001 diaphragm where rubber
had been in contact - crushed.

#34- Very sharp & tin-panny.
Quality Rotten.

#34- ① Feels well - somewhat sharp.

Test 3/6/5 - Heads fine on all - quality good - Excellent definition. Found as #74. Little sharper

- ② Rifle more feel
- ③ Becomes little more feel
- ④ Becomes little more feel

Under 3/6/5 - Putting gas to
 pieces - too fine - heads on
 heavy chords.

#35- ① On first trial piston
found bad needle.
On second trial - good
general quality but does not
carry ring of notes - sounds
dead.

② Runs up a little &
becomes more natural.

3/1/5-
#34- Head same as before. Put up
with diaphragm of Verano, .0015".
Seems very tight. Regular arm. No
dome. .038 x 125 Sapphire.

#34- Head same as before. Put up
with diaphragm of mica, .0015": ①

- ① Stretched tight
- ② Stretched not quite so tight
- ③ Loaded with wax
- ④ Loaded more wax

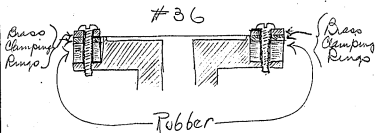
#35- 3/5/5-
Same head as before.
Fine diaphragm, .002". Loaded.
Regular arm & needle.

- ① Stretched medium tight
- ② " Tighter.

#36 - Quality good. Fairly
loud. Ring fair.
Nothing remarkable.

Test 2/6/15. Full - good beats fair - quality
excellent - rattles & bleats a little.
(pushed together). Stopped all bleats & onto down
volume little on soft playing.

#36 Head inside as per sketch
on following page to carry out
Mr. E's idea of only metal
touching vibrating diaphragm.
Diaphragm .0528" of acetyl
cellulose from solution in C. H. Sol. L.
Regular arm & needle.
Base 1/2" x 0.04" aluminum.



3/5/5.

Set up and tested out #s 35
& 36.

Found that #35 was rotten
at first - weak and tin-
panny. Mike showed a very
poor needle. Changed needle
and found results remarkably
different. New needle showed
excellent in Mike & entirely
changed the record.

This emphasizes the attention
which should be paid to the
saphires as it is evident
that at least 50% of the record
depends on this part of the
recorder.

except ^{who} Inartelle came. ^{who} Muriel has
laryngitis. No work done except
two short records made.

3/6/15.

Set up machine, underster
Tinsleyson to help and tested out
the following records

Cylinder #1

#3 Sharper than standard - Rather Dead -
puns notes together.

#74 Standard - full - natural -
differentiate stimuli.

Cylinder #2

#29 - Fair - puns less chords together -
Quality fair.

#27 - Back in legs - muffled - weak
puns together.

#74 - Standard

Cylinder #3 -
#74 - Standard

#31 - Reeds from reed arm touching
back arm. Natural quality, but
back in horn. High notes, plunky.

#31 - (Reed Raiser & reeds fixed) - Reeds
on lower notes

Cylinder #4
#8 - Reeds slightly on low chords &
tune, quality fair,

#12 - Reeds badly - Reeds - Tone
way back in horn - Dead

#74 - Standard

Cylinder #5.
#74 - Standard

#32 - Reeds fine. Tone a trifle sharper
than 74 but good definition. Rings.

#28 - Reeds much fuller than 32 - does not
ring quite so well but tone is natural though
little plunky.

Cylinder #6
#33 - Leads fine on single notes.
Beats on low chords. Quality
better plunkier - fair.

#34 - Leads fine on all. Quality good.
Excellent definition. Leads on
#74. Better sharper than standard.

#74 - Standard.

Cylinder #7
#74 - Standard.

#35 - Rattle - goes to piano - too full.
accentuates heavy bass notes.
Beats on low chords. Back
in horn. Responds to C.

Cylinder #8
#74 - Standard

#36 - Full - good - leads fair.
Quality excellent - Rattles
beats notes a little.

① Same surface. Run few notes together. Quality excellent

② Not quite so much surface as ①. Smoothed out & all notes differentiated.

③ As 2 but trifle cleaner & better.

Cylinder # 9
36 - (pulled tighter) This stopped the bleed entirely, but acts lower volume on light playing, record is less sensitive.

Later. Received $1\frac{1}{4}$ " triangular rubber gasket head & set up using diaphragm of acetyl cellulose film solution in C_2H_2 Cl₄ .0025" thick.

Set up:

① Regular arm - fairly large foot firm waxed to diaphragm.

② $\frac{1}{2}$ " dome aluminum .004" Regular arm etc.

③ Same as above but new arm sapphire -

3/8/15.

Had Fairbanks on his stop on recording machine so that sliding slide arm issued not knock off chain. Also put switch on recording machine for separate control of microscope lamp.

Tested out recorders with Geo. Mervin & Hayes as follows.

Cylinder #1

- #74 - Standard
- #36 - Louder than standard - little thinner - notes slightly
- #87 - Not as loud as 36 - triple sharp than standard - little metallic.

Cylinder #2.

- #74 - Standard.
- #32 - Louder than standard - rattles on high notes - back in horn - thinner than standard
- #41 - Big full tone - back in horn not as loud as 74 - very full little plunk - back in horn

Cylinder #3

#74 - Standard.

#34 - Not as good as standard. Full -
not firm - rattles - little
sharper than #74.

#4A - Not as good as standard. Late
back in horn. Quality very
good

Cylinder #4.

#74

#41 - (Needle raised) Very full -
trifle back in horn - slightly
muffled - good tone.

#88 ~~Full~~ weak & slightly back
in horn - full but not as
sweet as #74.

Got new $1\frac{1}{4}$ " head. Set up
with .0015" aluminum diaphragm.
Tested. Metallic, sharp, unpleasant,
tin panny, thin.

Set up 2" head (#33) with
.0015" aluminum diaphragm -
Same quality as above.
Set up with .003" aluminum

diaphragm. Still too thin but
better than sub, 0041.

- 3/9/15.

Loaded up #37 with extra wax on the dome. This makes it fuller. It is louder than standard & seems to make the melody stand out more - think it does not carry the ring so long. Differentiates well.

Made up #38 - new $1/4$ " brass head with .002" mica & tried out. This is loud & differentiates well but rattles slightly.

#37-

Good & loud. Stands out of horn - trifle sharper than standard.

- ① Makes it fuller. Definition excellent. Just a trifle of rattles. Tone good. Quality good. Louder than standard. Stands out of horn fine. Geo. Morris says best stretched because he's heard

#38 - Louder than standard.

Sensitive. Stands out well but little sharp & rattles slightly.

- ② Makes little more full. Still not as natural as #37.

Made on 3/15/15

3/9/15
#37. Brass head $1\frac{1}{4}$ " external, $1\frac{1}{2}$ " internal diameters. Triangular section rubber gaskets to stretch. Set up with acetyl cellulose diaphragm from section in Co. H₂ Cl₂ - 10025". Set up with aluminum dome $\frac{1}{2}$ " x .001" - regular arm & sapphire, .038" x .125".

See 3/15/15

- ② Added extra weight on dome

#38 - Brass head - $1\frac{1}{2}$ " external, $1\frac{1}{4}$ " internal diameters. Triangular section rubber gaskets to stretch. Set up with mica diaphragm .002" thick.

Regular arm with large feet. Regular sapphire, .038" x .125".

- ② Added extra weights on feet

Made over
3/11/15

#39 Loud, clean, firm,
stands out well, quality
little sharper than standard
but comes out clean.

#38 Tunes 3/11/15. Rays singing.

① Loud but muffled &
squeaks.

② (3/13/15) "Very like #1 -
fuller & more sensitive
than #74, little more
sensitive than #41."

③ 3/13/15 - Louder & more
sensitive than #74 -
little sharper, reacts
sharply on loud notes.

3/9/15

#39 - Brass head, $1\frac{1}{2}$ " external, $1\frac{1}{4}$ " internal
diameters, triangular section
rubber gaskets to stretch.
Diaphragm of stock celluloid
.0065" thick - screws just tightens
- not stretched.

Regular arm with medium
felt well waxed to diaphragm -
Sapphire .038" x .125".

3/10/15

#38 - Brass head: $1\frac{1}{2}$ " external - $1\frac{1}{4}$ " int.
diameters, triangular section
rubber gaskets to stretch.
Diaphragm of acetyl cellulose
from collection C. H. Old, .0015"
stretched rather tight.

① Regular arm with rather large
felt well waxed to diaphragm.
Sapphire .038" x .125".

② Made over 3/12/15 with $\frac{1}{2}$ " .006
flat aluminum disc & same
needle arm.

③ Changed above to $\frac{3}{16}$ " .006
aluminum disc. Same needle
arm.

Made over
9/10/15

#40 -

① Blasts - too full - blubbery.

② Very loud. Stands out of horn better & farther than any records I ever heard. Clear, distinct crisp - differentiates excellently. Is a little thin.

③ Makes it full (very) & rattle.

④ Cuts down volume & crispness & some of the sand out of the horn quality but makes it natural. Just a little sharp.

⑤ Makes it a little more full.

⑥ Not 9/11/15 Hayes singing. Stands out fine. Power, clear, crisp. Quality good. - Little sharper than standard -

9/10/15 = Sharp. Then 7/4 - does not ring out. Clearer. Harmonic. 1/10/15.

9/10/15.

#40 - Brass head 1 1/2" external, 1" internal diameters, triangular section rubber gaskets to stretch. Diaphragm of acetyl cellulose from solution. 0.2% Clt - 0015" thick.

① Regular arm with rather large foot, not stretched tight.

② Same stretched tight.

③ Added piece of solder wire to upright part of foot.

④ Put on aluminum disc 1/2" x 0.06".

⑤ Added wax to disc to increase weight.

Made over 9/10/15:

8/10/15.

Attended meeting with McChesney
to see about making Alex. Graham
Bell picture.

Put up #5 38 & 40 penders.
Recorded song of Miss Rensen.
Tested out #40 on Hayco.

Came back at night & made
further tests on #40.

#39 Tester 3/11/15-

① Piano arm / speaking.

Quality good but very weak.

② - Notes ringing
quite louder than 1 - still weak.
Notes says "weak & fair".

3/11/15.

#39- Head Brass $1\frac{3}{4}$ " ext. $1\frac{1}{4}$ " internal diameters. With aluminum disc over open part of diaphragm as suggested by M. Stutthorn. Diaphragm of acetyl cellulose from C. & L. - 0003. Thick. Regular .0382/15" caphone

① - With dome $1/8 \times .006$ - to vertical arm waxed to neck arm

② - Made up combined fast & vertical - waxed to neck arm.

8/11/15-
Made up # 39. Took to X
depot. Resled out following:-

Tested Hays singing Sabat
notes in #42.

- ① # 40.
Stand out fine. Loud. Clear.
Crisp. Quality good - little sharper
than standard. Hays says good.
- ② * 39² - Near - quality good.
looks even.
- ③ # 38 - Loud but muffled
a squeaks
- ④ # 74 - Standard.
- ⑤ # 37 - Louder than standard
Clear, crisp, stand out well.
little sharper than standard.
Should make commercial
records.

#41 - Tested 3/12/15.

① Fuller more sensitive than #74. Shows piano hammer blow on string on striking note.

② - 3/13/15 - less sensitive - does not show hammer blow of piano - does not strike no. ① - good quality.

Made over 9/5/15

#42 - Tested 3/13/15.

Not as loud as #74. Better sharpness. Needs better.

3/12/15 - (triangular rubber gaskets)
#41 - Brass head - $1\frac{1}{4}$ " external - $1\frac{1}{2}$ " internal diameters. Diaphragm of acetyl cellulose from solution in $C_2H_2Cl_4$ - .002" thick.

① Set up with $\frac{1}{2}$ " x .006" aluminum disc at center, regular arm, sapphire .038" x $1\frac{1}{2}$ ".
② Set up with $\frac{1}{4}$ " x .006" aluminum disc at center, regular arm. Sapphire .038" x $1\frac{1}{2}$ ".

3/12/15 -
#42 - Brass head - $1\frac{1}{4}$ " ext. - $1\frac{1}{2}$ " internal diameters. Diaphragm of mica .001" thick. Set up with $\frac{1}{2}$ " x .006" aluminum disc at center, regular arm, sapphire .038" x $1\frac{1}{2}$ ".

N

- 3/12/10 -

Put up recorder #41-

Misses Remond, Tiller - Improved came
 & "Fred over" Quartette from Pigoletto
 Remond - lead.

Record I - #9 - 2 min recorder
 (Go. Remond) - Good - full - clear

#105 - too pulsating -

Record #7 - #105 - back in horn
 quality - good. Keep only
 faintly together

Record #3 - not noticeably different
 except that soprano was
 flat twice but better
 more even voice

Record #4 - 2 min recorder #74 -
 recording & balance fine. Not
 very well together

Rec #5 - Campan #37 & #74
 recorders. #37 too pulsating
 muffled - does not
 differentiate well. Not
 commercial as hoped. (10/12)

8/18/15-

Negro quartette recorded.
Set up and tested #42

Tested Peaplers with piano.
Tested first #42 with #9 horn.
Found that it responded to
Ep. Raised horn & this did
not occur. Changed to #7
Linn & lowered. Did not occur.
Tested following records:

- #42 - Not as loud as 74 - has a
fine - little sharper
- #40 - Sharper than 74 does not
ring. Shows hammer
blows.
- #37 - More sensitive than #74
- blasts - full - but shuts
off notes
- #38 - Very like 41 but little more
sensitive. Shows hammer
blows of piano, full.

#41 - Fuller more sensitive than
#74 - shows hammer blows
of piano.

Made #41 up again taking
off $\frac{1}{2}$ " disc & replacing
with $\frac{3}{4}$ "
Makes it feel much better -
does not show hammer
blow of piano but shows out
more. Slightly fuller than
#74.

#38 Put $\frac{3}{4}$ " x .006" disc on #38.
Comes out good & loud, fuller
than #74 - blasts a trifle on
lower heavy notes.

#37 - Put $\frac{3}{4}$ " x .006" aluminum
disc on this ~~disc~~ ^{disc}. Is
still more sensitive & louder
than #74 though a trifle sharper.
Blasts a bit on lower notes.

#37 - Put on $\frac{1}{8}$ " x .006" aluminum disc.
Loud, clear, full, good quality,
little sharper than #74 but does
not blast or show hammer blows
of piano.

#37- Tests 3/13/15

- ① More sensitive than #74 and louder. Triple sharper. Blasts just a trifle on loud notes. Stands out of horn better than 74.
- ② About as loud as 74. Stands out well. Just a trifle sharper & clearer. Needs better on all notes.
- ③ Voice good & loud close in. Can be heard at 5 ft. Very weak at 12 & 15-18 ft.
- ④ With Knitstone Horn, fairly loud and distinct at 15-18 ft away.
- ④ Tests 3/17/15. Notes singing. Louder than standard. Triple sharper. Needs more. Piano good.

3/13/15

#37- Brass Reg. - $1\frac{1}{4}$ external - $1\frac{1}{4}$ int. diameters. Triangular section rubber gaskets to Percec. Set up with acetyl cellulose diaphragm from solution Co. H. Cl. 4 - .0025".

- ① Set up with aluminum disc $\frac{3}{4}$ " x .006" - regular sapphire arm
- ② Set up with aluminum disc $\frac{7}{8}$ " x .006" - regular sapphire arm

③ Same as above

④ Same as above

#40 Tester 3/13/15:

- ① - Loud - stands out fine but is sharper & more punched than #74 or #37-②.
- ② Not as good as ① - Very much weaker - dingy notes - stand out fair but notes not clear - rather thin & very punched
- ③ Ponder than 2 but rather not good

3/13/15.

#40 - Brass Head - $\frac{1}{2}$ " External, 1" Internal
Diameters, triangular section
rubber gasbits & stretch diaphragm.
Diaphragm of acetyl cellulose
from solution of C₂H₅OH - .0015" thick.

- ① Aluminum disc $\frac{7}{8}$ " \times .006", regular arm & sapphire.
- ② Aluminum disc $\frac{7}{8}$ " \times .004", regular arm & sapphire.
- ③ Left above disc on and added a concentric one $\frac{7}{8}$ " \times .008" same arm & sapphire.

3/15/15 -

Note up report.

Timberman on getting L min
part of recording machine to work

Set up Records #41

*Note book
3/15/15
#41 Tested night 3/15/15 -
Sharper than standard. Not
as loud. Tuffle back in horn.
Holds better.

*Note book
3/15/15
#37 Little sharper than
standard. Not quite
as loud. Holds better.
Not quite as sharp as #41.

*Note book
3/15/15
#38 Has a jump after notes. Note
sharper than #74

#36 - Tuffle sharper than
standard - not quite as
loud - holds as well or
better.

#41 - Brass head - $1\frac{1}{2}$ external, $1\frac{1}{2}$ int
diameters - triangular section
puffed gaskets. Diaphragm
of acetyl cellulose from
solution in C_2H_2 Cl $_2$.002
thick.

① Set up with $\frac{7}{8}$ " x .0075" aluminum
disc - regular arm & sapphire.

#37 - same as 3/13/15 -

#38 - Same as 3/10/15 except that
 $\frac{7}{8}$ " x .006" aluminum disc put
on.

#36 - Same as 3/11/15 except that
 $1\frac{1}{8}$ " x .006" aluminum disc was
on center.
Made cover for #39

#42 - Powder than 7H - Just a little sharper - Does not hold quite as well - Little fuller than #38 - rattles just a trifle.

#38 - Powder on treble - not so loud on bass as 7H - Speaks better - is a trifle thinner - differentiates notes fine - does not bleed in rattle.

② Not quite as loud as ① - takes away all tendency to rattle & runs out excellently. Still just a trifle thinner than standard. Need hoes for further trials.

3/10/15.
#42 - Brass head $1\frac{3}{4}$ " ext, $1\frac{1}{4}$ " int. diameters, triangular section rubber gaskets to plate.
Diaphragm of aluminum .0015" thick, made very soft by heating & cooling rapidly.
① Regular arm with large foot - .038" x .125" sapphire.
② Added $\frac{5}{16}$ " x .006" disc under above arm.

#38 - Brass head - $1\frac{3}{4}$ " ext, $1\frac{1}{4}$ " int. diameters, triangular section rubber gaskets to stretch.
① Diaphragm of aluminum .0015" made very soft by heating & cooling rapidly.
Regular arm with large foot - .038" x .125" sapphire.
② Added $\frac{5}{16}$ " x .004" aluminum dome under foot, otherwise same

3/17/15 (very sharp & thin - pyrexia)
Rattles thin standard, same sharp & pyrexia

3/16

3/16/17.

Saw Pammel & Nelson about
Graham Bell picture on the 27th.
Part of morning and afternoon
with them.

Made up Bandura's 2 aut^{os}.
Saw about getting 9000 rpm
screw on recording machine.
The old screws used so far have
mostly drunken threads so bad
that this machine can not be
used.

Unable to test because recording
machine was torn up.

Report on action of discs
and cones on record.

9/17/14

See not Book

[ITEM(S) FOUND IN BOOK]

[illegible]

Strutted pendants.

made a new one with
diaphragm of white celluloid, 0.005
in. thick from The Celluloid Co.
Patented it by small window opening
the head and warming the diaphragm
damping & allowing both to come
to normal temperature.

This gives a recorder which is too sharp and thin.

As this is exactly the reverse of previous reports where the records were all too full & bulky it is encouraging in that we have both extremes and can try for a mean.

[ITEM(S) FOUND IN BOOK]

Perhaps the diaphragms I have made are from film used green, that is, not entirely cured in which the solvent has not entirely dried out, which made them dead and not quick of response. Do you think it would be worth while to go out and attempt to purchase some various thickness of stock from the Celluloid Co and the Arlington Co. Such stock is probably better cured than that I could make here.

A. M. Kennedy

2/18/15.

[ITEM(S) FOUND IN BOOK]

- ① #4 - With Phones -
- ② #3 - without "
- ③ #2 - With Phones
- ④ #1 - without "

[ITEM(S) FOUND IN BOOK]

1 = 30

2 75-

3 70 but please

4 70

[ITEM(S) FOUND IN BOOK]

26 - too thin notes good
as # 67

25 - explosive squeak

67

67

23 - muffled & back

24 too weak -

Handwritten: Handwritten: (Mach 1)

- #0 - Set up Miami phone record book
-
- #1 - Set up by Glen Moore Set New US #3
Ampl. Earth #1
Ampl. Earth #2
- Return to good use
Set New US #3
Ampl. Earth #1
- #2 - Set up + m. -
- #3 - Set up -
- #4 - Set up -

**Notebook Series -- Notebooks by Edison and Other Experimenters
Recorder and Recording Experiments -- A. M. Kennedy Books
Notebook, N-15-03-17**

This notebook is a continuation of N-14-09-21. It was used by Absalom M. Kennedy during March-June 1915 as a daily record of experiments and tests with phonograph recorders and reproducers. The daily record is continued in N-15-06-04.2. The tests involve various instruments and parts of the recording machines and variations in the positions of voices, instruments, and recording horns. Also included are tests of machines to reproduce cylinder records from disc master recordings. The entries also describe other work by Kennedy, including his collaboration with Leonard W. McChesney and other employees in the production of "The Birth of the Telephone," a kinetophone film about Alexander Graham Bell. Kennedy's notes often mention Edison's own involvement in the phonograph experiments, including his comments, suggestions, and further instructions about particular recordings or masters. Other individuals involved in the work include Clarence B. Hayes, Walter H. Miller, John F. Ott, and an experimenter named Taylor (probably Henry A. Taylor). The front cover is labeled "Recording Experiments Book #2 from March 17-1915 to June 4, 1915" in ink and "Kennedy" in pencil. The pages are unnumbered. Approximately 150 pages have been used.

3/7/15

- ① #40 Louder than #74 - sharper and not so dull, sweet and natural. Blasts or rather rattles - sounds pinched. Stands out of horn fine.
- ② #39 - Not as loud as #74 - sharper - back in horn - quality fair - holds well.

3/7/15.

- ① Made up #40 - same as 3/10/15 - back 1 but with aluminum disc, waxed to open side of head portion being cut away to allow sapphire arm to project through.
- ② Hammered out new cap for #39 to allow larger space between diaphragm & cap.

Made up #43 recorder as per next page as an example of small diaphragm. This will test extreme smallness of diaphragm.

Learned from #43 that the method of fastening the arm makes a tremendous difference with a recorder. When the arm was fastened to the ring was too weak - when bent down & waxed to diaphragm was too loud.

#43- ① Sensat quality but
much too weak. Evidently
exerting such a short arm
has a damping action on
vibration.

② - First trial - so sensitive
impossible to get away
from surface - heard chatter
badly.

Second trial tightening up.
Very loud - bleaky - louder
than regular trans. Thin
& sharp - Rattles but musical
rattle.

③ - Neaker than 2. Thin
& sharp - rattles.

9/17/15.
#43- Brass Head $1\frac{1}{2}$ Ext. $\frac{1}{2}$ " int
diameters with triangular
section pulber gaskets to
stretch.

Diaphragm of acetyl cellulose
+ camphor .00075".

① Regular arm & scaphra
arm wired to clamping ring.

② Arm bent down & wired
to diaphragm.

③ $\frac{5}{8}$ " x .006" aluminum disc
on diaphragm.

3/7/14.

Tested out the following
records, Hayes singing "Satan
Mater" - Miss Ingred accompanying
on piano -

Cylinder I

#74 - Standard.

#37 - Louder than standard. Triple
sharp - Hoeds well - piano
good.

Cylinder II

#74 - Standard

#41 - Sharp. Squeaks - Louder
than standard - Starts out.

Cylinder III

#38 - Very sharp & squeaky
louder than standard

#42 - Piano sharp and Percussive.
Big - Loud - True - Muffled
Blasts - Does not hold -
Piano blasts badly -
Shows interference between
piano and voice.

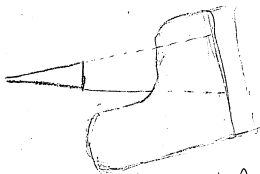
- Cylindripoda* IV
- #40 - Head - thin - Hairs
well - pinched - Should be
tried for sensibility &
manipulability
- #39 - Back in horn - Little
sharp - tender than #41
Hairs well.

3/18/15.

Inspected Powell's work on
Dechery for Bell Picture.

Worked on recorder #43. This
little recorder gets me. Punctured
diaphragm last night so put
on a new one this morning.
Put regular sapphire facet on
with arm put off. Blasted from
front by 2 threads prevent arm
working free & aft with chain
Such a mount has very
little resistance to vibration
yet this recorder is very low
not at all like when mounted
with bent arm to diaphragm
last night.

Experimented with mic.
Succeeded to find best position
for piano to make record.
Tried various positions
with various change of
horn position and at
her suggestion found



above position with horn
in horizontal line slightly
above middle tones of ~~flans~~
(so as not to include regular
bass strings) and is vertically
above focus with the strings.

The difference in positions
was very marked. In the
former position there was
a great deal of interference
& rumbling of notes and
the work was not clean
cut. In the new position
the balance was very much
better and the notes stood
out clear & clean.

3/19/50

Inspect Remell work for
Tacking Picture - Saw machine
on same.

Reading machine still going
bad. Difficult to locate trouble
causing drunken thread.

Trails of following records
Miss Impulse at Riano - Prologue
To Pagliacci.

#74 - Standard.

#37 - Weaker than standard.
Does not ring as long. Muffled.
Back in horn.

#42 - Louder than standard.
Sharper. Sounds better. Not
as full - Does not hold
ring as long.

#39 - Weak - no volume.
Fluffy - does not ring.

#41 - Thinner than standard.
Sounds better - Not as loud.
Does not ring especially
on high notes.

① Neck. Too weak to
judge. Apparently thin
plumby.

#36 - Round. Sharp though not
as thin as #41. Does not hold
as well as #41 though about
as well as #74.

#40 - Thin. Round. Sharp.
Holds fine. Stands out
~~differentiating well~~ well expec-
-tally on high notes.

#38 - Rounder than Standard.
Stands out well - Does not
hold - Thinner than
Standard.

2/20/15-

#43 -

Races head - 1 1/2" external. 3/4" internal
diameters. Triangular section
rubber gaskets to stretch.
Diaphragm sealed Cellulose
camphor, 0.0075" thick.

① Set up with 3/8" high di.
dome & arm supports from
front

Set up #13 with army
supporter from front. showed
very weak.
Set up #40 with similar
front supporter arms but
with disc & foot. This
showed up, also weak.
Set up #40 with regular
arm & disc. Still weak.

Marked on Recording
machine which was bad.

Marked on cap for disc
reproduction -
1st 3 discs to make
regular diaphragm, these
discs having different
size holes in center. That
having the smallest hole
made the reproduction weak
smaller than standard. Those
having larger holes affected
the reproduction less so the
size of the holes increased.

3/22/15.

To Newark to get furniture
for Parkins Picture. Two
trips required most of the
day. Went also to get
Automobile License.
Feared after General. ^{see very}
late of Parkins Picture.

Nights. Built up #48
pocket, with new neegee
arm. This record is too
sensitive starts on
even low (not loud) piano
notes, particularly in the
middle register. So not
responsive to the upper
register.

8/28/15.

Over to Studio & saw
to setting up furniture
etc. for 69 & 9 picture.

Started off salesmen's
class. These men are not
interested in this work
and it is going to be hard
to get them into it.

Might. Set up #43 with
new drum



arranged to support the
sapphire and not touch
ring to damp action.

This is much too sensitive
and chatters or sings when
record is revolved.

Then varied even just a
touch at bottom to ring becomes
very - (too) low in quantity -
not loud enough.

#43 - 1st trial Needle too flat & back of arm not secure. Needle chattered badly.

2d Trial - arm bent so as to give better angle to needle & back of arm made more secure.

Record sounds out fine but quality is peculiar - makes piano sound like a gitter.

#44 - ① Whistles so badly that it can not be used.

- ② Not as loud as 74 - Does not ring as well - Starts on middle Register notes.

③ Fine - apparently as loud, practically as full - holds as well & compares favorably with 74.

3/24/15.

#43 - Brass Head 1 1/4" External - 9/16" internal diameters, triangular section pulley gaskets. Diaphragm of cellulose acetate from solution of parts C₁H₃Cl₃ 30% / part C₂H₅Cl₄. Set up with regular arm bent down to meet diaphragm.

#44 - Need. - Diaphragm stretched over metal edge. 1 1/4" diam. Diaphragm of cellulose acetate from solution of parts C₁H₃Cl₃ 30% / part C₂H₅Cl₄ .002" thick.

- Set up
- ① Regular arm, lightly fastened to diaphragm at edge.
 - ② More firmly fastened at edge also on diaphragm.
 - ③ 7/8" x .006" disc. put on & remounted.

Oct 15.
Looked after Wilson's photograph
of taking picture.
Quiet up records at 4:15
& tested preliminary on Hs.

8/25/15.
Marked #74 over. Rough
cut at first. Turned
sapphire & reset arm -
Seems good compares
favorably with #74.
Tried out again with Miss
Imprud. Residue seems to
hold better than #74. Stands
out of horn better - is about
as loud - quality fairly near
the same. Held for
further test.

At Studio to get set up
for picture. Gibson jumps
around with cameras too much
and does not attend to
the larger things in lighting.

Next made up & tested
out recorder #46. So thinner
& sharper than standard with
regular set up and with $\frac{1}{2}$ " & 006"
aluminum disc.

#45 - Tested 3/10/15

- ① Good, form, differentiated well - flange cut by hand. too thin & sharp.
- ② But little change from above except that it is thinner & more pushed
- ③ Try smaller dome in place of disc.

3/25/15
#45 - Brass Head - Knife edge design - $\frac{3}{16}$ " diameter.
Diaphragm of cast cellulose (some) solution.
mg. $\frac{1}{4}$ Cl $\frac{1}{2}$ = 1 pt $\frac{1}{2}$ Cl $\frac{1}{2}$ - .001"

- ① Set up with regular arm & large foot & regular cap phre
- ② Set up with $\frac{1}{2}$ " \times .006 aluminum disc - regular arm, foot & cap phre.

8/26/15.

Morning - with Diamond
Riss. Feldman.

Afternoon - Recorded Miss
Luckie - 2 songs - 5 records.

Worked out recording "Statat
Mater" composed by Romano
Recorded Swartelle from
Rogalotto. Next balance
cpt. Used # 11 recorder

Tested out # 44 against
74 recorder with Miss
Tails voice. # 44 shows
up excellently. Sounds
out better than # 74 - is
go loud & practically as
full. Cuts off ring on notes
a little sooner. Made
all Swartelle records
with it. They were good.

2/27/15-

Checked up scenery, set up the
Lo Bell Telephone Picture.
Worked on Reader #16 - 8
diameters.
Afternoon - take Lo Bell Telephone
Picture.

Sept 15.
Went to Newark to Lehigh Valley
car, take examination for drivers
license and keep book where in
morning.

Instructing Raymond Rice Johnson
in afternoon.

#45 ① - 2/21/15

Brak - sharp - stands out
well - makes piano sound
like a yether.

2/20/15.
Including Diamond Decadamen
all morning.

Examination afternoon.

- #45- Brak - head - knife edge
pattern, $\frac{3}{16}$ " diameter.
Diaphragm of acetyl cellulose
from solution of pure acetals
+ 1 part C_2H_5Cl .
① Aluminum disc $\frac{1}{2}$ " \times .006" waved
to center of diaphragm.
Sapphire regular .038" \times .125"
Ann regular, waved to center
of disc & to edge of diaphragm.

#46 ① 3/30/15.

- ① Piano louder than #44
Very loud - Reeds well
cut sounds like Zither.
- ② Very loud, but has a
barrelly or horn tone.
- ③ Becomes very full - Zither like
tone all gone - but barrelly -
loudness much diminished -

- 3/30/15
- #46 - Brians head. Knife Edge
design - $\frac{5}{8}$ " diameter.
Diaphragm of acetyl
cellulose from pelation
in space C.A.C. 3+1 part.
C.A.C. 104 - 90% thick
- ① Set up with regular arm,
fairly large foot - large
area of wax in center,
waxed to edge of
diaphragm.
Regular .038 x .125 Sapphire.
 - ② Needle cooked more than
above.
 - ③ Loaded with small piece
of wax.

8/3/15

Reset up #47.

Tested out #45-46-47 against #44.

#45 - Neak - Sharp. Stands out well.
Makes piano sound like
a Zither.

#46 - Loud - Less sharp than #45.
Stands out - Zither sound.

#47 - Not as loud as #46 but
louder than #44. Stands out
well. Sharper than #46.

#44 - Good.
Tone somewhat Zither like.

Took some of the wax denturing
out of #45 horn to disphagm
away to make more free.

Added to #47 disc 9/4006"

Soft aluminum.

Coated neck of #46 more to
give sharper cut.

Olson - Quattles - new
arrangement to train in new
arrangement with horns
test of these

#44 - Very good

#45 - Neak - sharp. Sharp Zither like

#46 - Very loud - blasty horn sound

#47

① 4/1/15 - Louder than #46
standing but not as loud as
#46) Stands out well.
Sharp & thin. Curves somewhat.
Zither like tone & piano.

②

Holds well, little neck
sharp - thin. Slightly zither
like tone. Not loud.

#48 -

① Not found enough.
Rat in horn. Still thin
not good as #47

#47 - Brass head, knife edge pattern,
1" diameter.

Diaphragm of acetyl cellulose
from solution 3 parts CH_2Cl_2
1 part CH_2Cl_2 - .002".

①

Regular arm & sapphire.

②

Put disc of aluminum on
center ϕ .006".

#48 - Brass head, knife edge design
1/2" diameter.

Diaphragm of acetyl cellulose
from solution 1 part CH_2Cl_2
3 parts CH_2Cl_2 - .002"

①

Regular arm & sapphire.
Aluminum Disc Center
.075" \times 1/8".

4/1/15

Made up list of records to take.

Made up #29 index.

Loaded #46 with extra weight of
lead to make more full.

4/2/15 Tests

#44 - As loud as #74. Stands out better - does not ring so much that is appears to be damped to a greater extent. Notes was

#48 - Not quite as loud as #74 or #44 - Does not ring as much as #44. Notes better than #44 is a little softer & sweeter.

#49 - Better more resonating than #44 or #48 so that it has a hinge of beats gone quite smooth.

THE DIFFERENCE BETWEEN THESE THREE IS VERY SLIGHT.

4/2/15

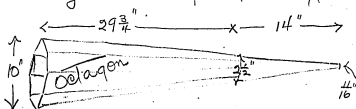
Tested reorders as on other side.

Had made 2 reordering horns as follows -

Length $4\frac{3}{4}"$

Material, sheet zinc .010" thick, lapped & secured joints.

Mouth of mouth 10" of end $\frac{1}{16}"$ larger end Octagon smaller, round.



Length #2 $43\frac{3}{4}"$
 Material, sheet-glass .010"
 Diameter: mouth 7", end $\frac{11}{16}"$
 Larger portion octagon, smaller, round.



TEST OF HORNS -

- ① Standard - Clear, clean
- ② Little louder than ① - fuller
inclined to blast at one point
- ③ Little louder than ① - fuller -
practically as loud as ② but
no tendency to blast. SEEMS
THAT WALLS OF HORN MUST
VIBRATE -
- ① #44 Reorder with #7 horn
54" from floor - 57" from
music rack of piano.
- ② #44 Reorder with new #1
horn, 54" from floor, piano
not moved so 45" from
music rack of piano
- ③ #44 Reorder with new #1
horn, 54" from floor, piano
moved to 57" from horn.

- ④ Horn #2 - Goes more distant and sharp effort to voice, and to piano than #1. Differentiates better and does not blast or interfere.

Experimented with #46 recorder on loading. First heavy load, was too full. Gradually decreased load and it became sharper. Tone was not perfect but proved that the dullness is increased by the load & sharpness by the spring.

#35 - Clear, bright, stands out
well, trifle sharp &
has rather like tone.

#44 - Practically as loud as
#35 - fuller definition
as good but fullness
makes it apparently not
stand out as well.
Bass notes sound more
full and natural.
Whole piano reproduction
more natural.

#48 - Very like #44. Almost
impossible to detect
difference.

#47 - Louder & sharper than
any of the above. Gives
rather a pronounced
better like quality.

4/26/15.

Taylor put on.
In castings for heads.

Send Reader #35 from
Recording Dept by Mr. Walter Miller.

Tested out Readers #35-44-
48-47 as per opposite page

Made over #47 with $\frac{1}{8} \times .006$
aluminum disc on center. Otherwise
same as before. Change
consisted in increase of size of
disc by $\frac{1}{8}$ ".
Effect - not so loud - Sharp -
not loud enough for commercial
work.

Made over #47 with $\frac{1}{8} \times .006$
aluminum disc on center. Otherwise
as before.
Louder than above & sharper -
too sharp for commercial
work.

#47-

① - Sharp - brings out treble notes but loses back the bass. Loud - firm - holds well -.

② Less sharp - Fuller.

③ Still more full. Quality fair - bass begins to show out.

④ Still more full, not so loud - back in horn

Mick and Gyp

4/27/15.

#47 - Brass Head - Knife Edge Pattern.
1" diameter.
Diaphragm of nitro cellulose

① 1/8" x .006" aluminum disc, regular arm & papphic

② Loaded with small weight

③ Loaded with heavier weight.

④ Loaded with steel heavier wt.

Mick and Gyp

Nick Miss Ingrid - tested records #44 against #35.
Hayes, Miss D., Harpin & K separately agreed that #44 gave more natural piano reproduction.

#47- Loud - Stands out fine. - Sharp -
shows hammer stroke of
piano.

4/28/15

Put new disc, all minimum $9\frac{1}{2}$ " x .007"
on #47 reorders & tested each. Result
opposite.

With horn #7 tested out the
following reorders.

#85 - (Studio Standard)

#47 - Loud - Stands out better - sharper
shows hammer stroke of the piano.

#44 - Loud as #85 - Little duller - Dots
fine - Little more quack than #85 -
Does not show hammer blow
as much.

#74 - (Merris Standard) - Loud as #85 -
Little duller - Hears a little
better.

Tried same out with long horn #1.
The effect of this horn as compared
with #7 is to diminish the percussive
effect of the piano hammer & smooth
527

the records cut.

In this test =

#35 - (Studio Standard)

#74 (Kammer's Standard) - same loudness.
Little more full. Raco's trifle better.

#44 - trifle louder than 35. Slants out
better - ~~less~~ fuller - 600 notes show
up better.

#47 - Louder. Sharper. Shows Kammer's
strike

Flattened needle arm on #48. Makes
good piano record, better than #35 -
and tends to hit better than #44.

Dropped needle on #48 still further

On test against #44 is about
same in loudness but is a trifle
sharper & a little more distinct but
shows Kammer's blow reverse

Night = Tested #44 recorder
against #35 for blast and for
recording at a distance.

#44 blasted more than #35 and
was not as loud at 6'-12' x 15'.

Compared #47 (1") recorder with these.
This recorder blasts as loud as
loud voice close up but is
noticeably louder at 6'-12' x 15'.

than #35.

Tested #46 recorder (5/8") under
same conditions. Very sharp and
unnatural. About as loud as #47
at 6'-12' x 15'.

Tested #45 recorder (9/4") under
same conditions. Sharp & unnatural.
Very slight blast heard close up.

About as loud as #47 at 6'-12' x 15'.
Tested #43 recorder (9/4") under
same conditions. Sharp & unnat-
-ural. Blasts close up. About
as loud as #47 at 6'-12' x 15'.
Recorders #46-45-43 are louder
than the larger recorders at
close range.

4/29/15.

Buett #48 even with some $7/8$ " "1004"
aluminum on center. Sharper & clearer
than before but seems to intensify
some notes - not as even as
with disc.

Buett up #50 new head made
by Taylor.

Tested out #35-50-44-48
^(in order)
with Miss Ingram playing
Prologue from Baglacci very
loud. Used #7 horn - 54" from
floor - 48" from rest on piano.

- #35 Standard. - blasts slightly pump
- #50 - Blasts freely - somewhat muffled
not as clear & distinct as standard
- #44 - Same blasts. Very full, present.
- #48 (as above) Also full, natural
quality - little muffled.

It is evident that the powder
must be selected for the horn &
player. Heretofore when playing ^(as)

myself - (sustained notes - soft touch)
always picked #41 recorder with
#9 long horn as best yesterday
got record of Mr. Edison playing
(heavy, Staccato, legato, no phrasing)
with same combination. Has not
got it. With Mrs. Ingersoll playing
Paganini (very loud & marked), #41
blatant and did not show up
much.

In response to note by Mr.
Edison to make regular records
with cutter arm at right angles
to usual, made up regular records
with regular arm and tested out.
Shows up pretty well. Then took off
arm & built horizontal arm as
outlined by Mrs. E.

4/20/15.

Found trouble in MBE's right angled arm recorder of yesterday & changed the arm to remedy.

Made test with this and contrary to expectation it did not chatter but made a very good record.

Mis by further, supporting the arm better.

Made up #2 recorder of same sort. The surface of this is excellent - one of the best I ever heard.

Night

Made records with recorder #44. Piano played hard - exactly. This, blaster frequently.

Brightened up on diaphragm. This diminished the tendency to chatter and made records quite sharper and better.

Noted that some notes pan

together also. Tried changing horn
sign # 7 to #4 - small mark
short horn, Reards were improved.
Took down pearder #44 & substituted
for

5/15.

Made up another recorder with arm at right angles to regular position

Tested out this and previous recorder first with right angled arm and then replacing this with the standard arm. In both cases there was a little less surface with the regular arm than with the right angled one.

#50

Brick burn
5/8/5-

- ① Blasts noisy, somewhat muffled. Not as clear and distinct as standard.

#50-

Brick burn
5/8/5-

Brass head, knife edge pattern, 1 1/4" diameter.

Graphograph of acetyl cellulose from solution 1 part C_2H_5Cl to parts C & D, .002"

Regular exposure & arm

- ① Line 7/8" x .006" in center.

#57

① - Even, true nice quality.
Trifle back in horn. Steel,
But having raspy places
on loud chords.

② Not loud as ① - Further
back in horn. Same pitch
w/ rasp on low-low chords.

③ Better than ① & ② but steel
has some bleets - does not
blend as well as #35. Good
full tone as loud as #35
dent does not dent out
of horn as well.

Made over 5/10

#51 - Brass head - Knife edge
Pattern - 1 1/4" diameter. (dome)
Diaphragm of acetyl
cellulose .002" - from
solution 1 part Cst salt
+ 2 parts Ctl's.

① 1/8" x .006" apum aluminum
dome. Steel arm no foot. Reg.
sapphire. Arm very flat.

② Same as ① but arm
raised a trifle.

③ Aluminum arm with regular
foot - regular sapphire.

Made over 5/10

5/8/15

Made up & tested out #51
reservoir against #35.

Changed sapphire arm several
times in attempt to get away from
a peculiar chipping sound the
reservoir had. Was unable to remove
it entirely.

Started building up reservoir
#59 - did not finish

5/4/55.

Finished up records #57 and
tested out as follows -
using horn #67

Piano - ordinary (not as E6)
Very full & natural - looks O.K. Quite
back in horn but makes piano
sound more natural than any
records I ever heard.

Voice AMK speaking. Much more
natural & full, as loud as #35.

Piano - Loud & loud low chords
(Funkenhaus March). Reverts on

object but very natural quality.

Voice - plays purring fast & loud at midnight

Natural - mellow - true. #35

Stands out better, is more brilliant
but not so natural.

But #50 over in attempt
to get #57 quality but one that
wasn't rock better.

#52

- ① - Very full - natural - mellow.
In contrast with #35 does
not stand out (sounds buried)
Plots on strong low piano
chords. Is good and loud.

5/4/5
#52 - Birds head - knife edge
pattern. $1\frac{1}{4}$ " diameter.

Diaphragm of cellulose
acetate .002" from solution
1 part C_2H_5Cl 2 parts $CHCl_3$.

- ① Same, open aluminum
 $1\frac{1}{16}$ " \times .006" on center. Regular
drum & sapphire.

#47-

① Tested against #35-
shows up louder, fuller &
more natural. Surface good.

② On further test this
peoples whistles so badly
that it had to be torn
down.

③ Sharper & louder than #35-
Shows percussive effects
of piano hammers. Holds
well.

5/4/15-

#47-

Brass Head, Knife edge Pattern
1" Diameter.
Diaphragm of nitrocellulose .005".

- ① Spun dome about $7/8 \times .006$ " regular
arm, capphire, arm with
dome.
② Arm fastened to diaphragm.

5/11/55.

Made tests with Messing, Selection from "Granata".

Horn # 6. - 54" from floor/57" from music rack of piano.

35 - Standard - Haldoburn. Sharp Jingles.

50 - Fuller than #35. Fully as loud. Brings out the bass notes better.

51 - More sensitive than 50 - Louder. Sharper. Blast.

58 - Very full. Fine quality on outside, very natural blasts on piano effect.

5/5/15

Brief and #57 - same except
"19/16" x .008" dome on center. Still
very full - back in horn &
blasted belly on low chords.
Brief over with heavier diaphragm.

0035.

New Rod's fine. Fully & natural
but a trifle back in horn &
not quite as loud as standard.
Tested out the following other
members - #50 & 52.

#50 - as compared with #35
Not as loud - fuller, does
not stand out quite as
well.

#52 - On Voice - finest & fullest
of all. On Piano natural but
inclined to blast on heavy
chords.

Buck and
5/7/15
#5/- As compared with
#35 this recorder is not
quite as loud - is fuller and
more natural. Does not
stand out as well. The
cut may be improved a little.

Buck and
5/7/15
#5/- Brass Head - Knife edge pattern.
1/2" diameter - domed top.
Diaphragm of acetate cellulose
from solution 1 part $C_2H_5Cl_2$
to parts $C_2H_5Cl_3$. 0035".
① Aluminum dome 1/2" x .003"
on center - regulated arm supplies

#53

① Load as 35 - about
the same in sharpness.
#53 sounds trifle duller
& further back in horn.

② Trifle more full & stands
out better.

5/8/15.
#53 - Brass Head - knife edge design
1 1/2" diameter - flat top.

Diaphragm of acetate cellulose
from solution 1 part $C_2H_5Cl_2$
2 parts $CrCl_3 \cdot 0.0085$.

① Aluminum dome 1/4" x .006"
regular arm & sapphire.

② Needle dropped a little.

Maybe can
get 1/16" in
2 hours with

5/6/13

Listened to various tools etc.
last afternoon.

These tests showed up as follows:

- #35 - Standard -
- #47 - Sharper and louder than standard. Shows percussive effect of piano hammers. Sounds dull.
- #48 - Fuller than #35. Also few notes. Fairly loud.
- #50 - Triple fuller than #35. Not as loud. Sounds dull.
- #51 - Fuller and more natural than #35. Back in horn. Rings on some notes.
- #52 - Full & loud. Sensitive. Very full & natural in tone but lacks on some of the lower notes.
- #53 - Sharper than 51 or 52. About same as 35. About

#47

- ① Sharp. small-pinked medium length but beaks fine.
- ② Just a trifle louder and fuller than ①.
- ③ Trifle less loud but smooth. out all jingles & other inequalities. Very smooth. Surface fine.
- ④ Very loud. Trifle sharp & stringy.
- ⑤ Reduces volume. Still louder than #35. Trifle sharp & stringy.
- ⑥ Louder & fuller than ⑤ on piano. Not so good on voice, sounds like had a cold.

5/6/15

#47 - Brass head. Knife edge pattern 1" diameter.

Diaphragm of cellulose acetate from solution
1 part CH_2Cl_2 + 2 parts CHCl_3

- ① Open aluminum dome $\frac{1}{4} \times .006$ " Regular arm and capillary.
- ② Used $\frac{1}{8} \times .006$ " dome same otherwise as above
- ③ Same as above but with cork cone $\frac{1}{8}$ " diameter on inside
- ④ Removed dome from above & mounted arm on small piece of cork
- ⑤ Put on $\frac{3}{4}$ " $\times .006$ aluminum dome
- ⑥ Put $\frac{1}{8}$ " cork buffer on top.

5/7/15

Built and recorded #57 with cork
cones on both pedes. On test this
recorder is louder than #35 - fuller
more natural. Blasts on heavy
chords however, will hold
for further tests -
Hence it also against #57. Is
louder and does not hold quite
as well.

Quartette came in afternoon.
Very baritone doing well. Made
8 Rigglets records, 4 of which
kept. Made 9 "On the Time of
Reels" records. These last were
not so good in balance and
effect.

Used recorder #35 on one
of these, not good too sharp
and did not hold. #74 used.
Used also 4 way tube & 4 horns

#51-
 ① - Louder than #35.
 Miller, than #35.
 Natural quality, but
 blasts a little on heavy
 low chords.
 Stands out better than #35

Museum

5/8/15

#51-
 5/7/15
 Brass head, 1 1/2" diameter, knife
 edge pattern, head domed.
 Diaphragm of cellulose acetate
 .002" - from solution 1 part
 C₂H₂Cl₄ + 2 parts CHCl₃.

① Cork core on inside 9/16" diameter
 x 1/8" high. Cork core on outside
 3/4" diameter x 7/8" high. Regular
 sapphire & arm.

Museum 5/8/15

5/8/15

Made record #50 over using cork cones on inside and on outside. Tested out against #74. Held as well. About as loud but sounded more muffled and back in horn.

On loud test - held about as well as #74.

Made over domed head #51 - with $\frac{7}{8}$ " cork cone inside and $1\frac{1}{2}$ " $\frac{1}{16}$ " cork cone outside with fairly thin and light.

This record showed up very loud and full on Saturday afternoon and held practically as well as #74. On further test Monday morning was a bit more full and did not hold as well, showing that it had stretched somewhat.

#50-

① Compared with #74.

As loud and full as
#74 - feels as well
but sounds little muffled
and back in horn.

#50 - ^{\$18/15-} Brass Redd. knife edge pattern
1/16" diameter.

Diaphragm of acetate cellulose
.002" diameter - from solution
of part $\text{Co}_2\text{H}_2\text{Cl}_2$ + 3 parts
Chtal₃.

Cork cone on inside - 1/4"
diameter x 1/8" high - cork
cone on outside 1" diam.
x 1/16" high. Regulated arm &
needle.

Made saw 5/8/5-

#57

① - Louder & Fuller than #74 but inclined to fringe. Has then tightened up more & held as well as #74. Reached & held over Monday morning and see if it held. Apparently louder & fuller than #74 shows as well.

Made saw 5/8/5-

#57-

5/8/10-

Brass head - domed top - $1\frac{1}{4}$ " diameter, knife edge pattern.

Diaphragm .002" - casted cellulose from solution 1 part Co. H. 1 lb.

① Cork cores - $5\frac{1}{8} \times \frac{1}{8}$ " inside $1 \times \frac{1}{16}$ " outside. Both turned thin. Regular sapphire and arm.

5/10/5.

Tested out recorder # 51 against # 74 after leaving it out from Saturday to see if it reached stretch. It was fuller and did not hold as much as on Saturday and must therefore have stretched somewhat.

Made up report.

Made up cork cones for recorders.

Tested out # 36 as previously made ($\frac{1}{2}$). Triple sharp & other like in tone.

Replaced aluminum disc with cork cone.

Recorder becomes fuller, same loudness & quality of standing out much better. fails to respond to the notes of higher register.

Recorder # 57 was tried - first as it stood - very sensitive & full. Would not stand loud sounds as well as # 74. Then tightened up. Some of the very full quality was removed and the recorder goes more

trans 74.

#74 - Standard.

#48 - Feel - more muffled & rattly than 74 - not quite as loud and does not stand out as well.

#44 - Loud as #74 - practically as feel - holds fine.

#51 - Loud as #74 ^{little} sharper and does not hold as well. Has fringes.

#74 - Standard.

#50 - Not quite as loud as 74. Shows hammer blows of piano. Plucky.

#54 - Very sharp - loud. Unpleasant.

#86 - Loud - little sharp. Holds fine even better than #74.

5/11/15.

Reed and #44. Rained one diaphragm by mistake. A second snapped when tightening up. This gave me one to heat the head so as to soften the diaphragm material. This gives also much lighter strutting.

#44 held fine but was not loud enough and had a bad rattling quality.

Diaphragm cracked from strain. Reed and with cellulose nitrate diaphragms. Tight stretched by heating. Was too sharp & thin.

#54 (new one with high domed head). Reed up with ink cones inside and out. Diaphragm tightly stretched. Is too sharp & thin.

Tested out with piano the following reed orders with results on opposite page -

#74 - #48 - #44 - #51 - #50 - #54 - #86

#44 -

- ① Holds fine but is not
loud enough, somewhat
sharp and rattles on
piano notes.

#44 -

5/11/15

Brass head $1\frac{1}{2}$ " diameter, knife
edge pattern.

Diaphragm of acetate cellulose
.002" from solution / part
 $C_2H_2Cl_4$ + 2 parts $CHCl_3$

①

Aluminum dome spun $7/16 \times .008$ "
Steel arm without foot, regular
.038" \times .125" sapphire. (Stretches
tight)

Diaphragm cracked
through sustain
Binet gun

#44

- ① First trial with Miss
Sungud at piano. Thin &
sharp but heads used. fairly
loud.

5/13/15

All tests on this date
show fine. This recorder
very loud, loudness &
pitch as is.

5/11/15

#44-

Brass head. $1\frac{1}{4}$ " diameter. Knife
edge pattern.

Diaphragm of nitrocellulose
oscillograph (Piermano old stock)
.002". stretched very tight.

①

Cork cone on outside - $\frac{5}{8}$ "
diameter & $\frac{1}{8}$ " thick. steel arm.
too fast. Regular .038 & .025 caphorn.

#57

① On first trial with
Moss Ingot was sharp
& thin - fairly loud & seemed
to stand put & hold well.

② Compared with #74, #55.
Sharper than #74 - about same
quality as #55. Not quite
as loud as either. Acety
better than either.

mean obs. 5/12/15

#54 -

5/11/15.
Brass Head, $\frac{1}{2}$ " diameter, knife
edge pattern. Domed head.

Diaphragm of acetate cellulose
from solution 1 part C_2H_5Cl +
2 parts $CHCl_3$ - .002" thick.

① Inside cork cone $\frac{5}{8}$ " x $\frac{1}{8}$ ". Outside
cork cone 1 " x $\frac{1}{16}$ ". Regular arm
 2000 x 100 sapphirine.

5/12/15
② New diaphragm same as above.
Inside cork cone only $\frac{3}{4}$ " x $\frac{1}{16}$ ".
Regular arm & sapphirine.

mean obs. 5/12/15

#54- Not quite as loud as 74
or 35. Holds better than
either. Sharper than 74 -
about same in quality
as 35. Excellent holding
qualities.

Second Trial. Loud as
#74. Knife sharper & holds
better.

Made over
5/15/15

5/12/15.

Made #54 over. Only change was
use of cork cone $\frac{3}{4}$ " x $\frac{1}{16}$ " on inside
only. Result see opposite.

Made #51 over. Same as before
but used aluminum cones
 $\frac{3}{4}$ " x $\frac{1}{16}$ " inside and out, screwed
together, no wax being used.



This pearder gave more
curious results,
when first made ~~tested~~ was very
full - ~~holding~~ but fine
quality of holding.
After ~~and~~ do not hold so
well.
But ~~the~~ test had become
as loud as #74 - held fine, and
was a trifle sharper.

- 5/12/15-
- ① First trial plans. #51 not nearly as loud as #74. much fuller - back in horn - more natural. Needs fine Second trial. Did not load so well.

#51 - Brass head - domed top. knife edge pattern - $1\frac{1}{2}$ " diameter.

Diaphragm. 002" acetate cellulose from solution 1 part H_2O + 3 parts CH_2Cl_2

Paint-Dew 5/17/15-

- ① Aluminum cones $\frac{1}{4} \times \frac{1}{16}$ " inside and outside, screwed together - no wax used & fasten to diaphragm. Rydell arm (waxed & screw head) and $5/32 \times 1/25$ " Sapphire.

5/13/14.

Next over chronograph with
Taylor & laid out magnets.

Made over #51 - cutting off all
superfluous metal on screw and
tightening up diaphragm to the
limit.

This reardon is very full, low
mellow & sweet but blasts on
low chords. Blast is caused
by jump-outs.

- 5/13/15-
- ① - Speeds much but sharper than #74. Stands out well and as loud.
 - ② Became much weaker & much more full back in horn.
 - ③ Became little louder & looks less full.
 - ④ Became little louder stands out better & little less full.
 - ⑤ Still louder, stands out better. Still a trifle more full than #74.
 - ⑥ Became little more sharp than #74.
 - ⑦ Tests out very good. Trifle louder & fuller than #74. Not quite as loud as #44.

- 5/12/15-
- #55 Brass Head - $\frac{1}{2}$ " diameter knife edge pattern.
- Diaphragm of cellophane nitrate, .0015" thick
5/14/15
- ① Cork Cone $\frac{1}{8}$ " x $\frac{1}{8}$ " on inside. Regular arm x .025 x .05" cephire.
 - ② Put under this a brass disc $\frac{1}{4}$ " x .014" to add weight.
 - ③ Reduced above disc to $\frac{5}{8}$ ".
 - ④ Reduced disc to $\frac{1}{2}$ ".
 - ⑤ Used $\frac{1}{2}$ " x .012" aluminum disc in place of the brass.
 - ⑥ Used aluminum disc $\frac{1}{2}$ " x .008" & tightened up.
 - ⑦ Back to $\frac{1}{2}$ " x .012" aluminum disc

5/4/15.

Marked on record # 55 - finding it to sharp, added weights in shape of disc on the center and thus made it weaker, more full.

Gradually cutting down this weight made it increasingly louder & sharper though never as sharp as # 74.

Quartette came. Made scale records of Miss Dawson, solo record of Applegate singing "Evening and Morning". Compared Records 74-44-54 & 55 on this. # 54 & 55 were too full & weak, # 44 was a trifle fuller than # 74 & better.

Made most satisfactory quartette records we have yet made. Balance & time (keeping together) good. Expression showed a marked improvement.

Further tests on #55-44-74
5/15/15
#55. finally full, loud as 74 & better
on piano. Not as clean & crisp
on voice - stands out well.

#44 - louder than 74 or 44 - stands
out better, & fuller than
74 - excellent on voice
needs appropriate music
Recess.

Made up #55 - lower

5/7/15 - ① Good and firm. About
as loud as #74 - fuller.
Will try made louder to
compare with H4055.

Made over
5/7/15

② On test with player piano
as loud as 74 with knife sharpen.

③ Fills out slightly.

5/15/15

#54 - Brass Head - $1\frac{1}{4}$ " diameter.
Knife edge pattern.

Diaphragm of nitrocellulose
+ camphor, .002".

① Made over 5/24/15
Cork disc $\frac{3}{4}$ " \times $\frac{1}{8}$ " (flat heavy)
on inside.

② 5/7/15
New diaphragm .002" same
material as above, new cork
disc $\frac{7}{8}$ " \times $\frac{1}{8}$ " - Regular arm &
sapphire.

③ Put $\frac{1}{2}$ " \times .008" aluminum disc
under fast to add slight weight

Also ~~test~~ out

#57 - fine - full, loud natural

#54 - loud but sharp. nice loud.

#53 - just as loud as 57-44

55. Holds well, is a little sharper than 55-57 or 44.

Tightened up #53 - Becomes sharper & develops whistle. Does not stand out so well as #74.

5/17/14.

Saw about getting disc machine for Demonstrating Voice Experiments.

Note Report.

Made over #51 & 54 records. On first test #54 (as made up Sat.) was as full as #74 and held as well and was about as loud. It was not as loud as #55. Still however. Made over to make louder.

Tested

#51 - Stands out fine. Good & loud. Voice natural. Piano much better than #74 - more natural.

#74 Standard - sounds sharp in comparison.

#44 - Quite more brilliant than 51 & trifle sharper.

#55 - Very big & full - loud - piano good. So full is not quite natural on voice.

(115)

- ① Jaws cut well. Good and
loud. Voice natural. Runs
more natural than #74.

#51

5/7/15.

Brass Head - domed top -
knife edge design - 1/4" diameter.

Diaphragm of cellulose nitrate &
camphor (old stock), .0015".

- ① Cork cone $\frac{7}{8}$ " \times $\frac{1}{8}$ " on inside.
Regular arm with feet & sapphires.

5/18/15.

Rigged up player piano in Hayes room and tried it. Works OK, but does not sound as well as hand playing.

Testing with player piano.

- #74 - Standard
- #44 - Louder than #74 - fuller but rattles
- #54 - About as loud as #74 but sharper.
- #57 - Louder than #74 - Fuller holds well.
- #48 - Not quite as loud as #74 but full & good quality.
- #55 - Whistles so badly it can not be used.

Next send to New York to inspect Kinetophone apparatus for talking pictures for Dr. Bell.

5/19/15

To Kintessing Dept. to get pulls
& records for exhibit to Dr. Bell.

These are now kept in the Gas
House and are in bad shape.

Many of these stored on 3d floor
of the Studio do not seem
to be in the gas house. Most
of the pulls & records in gas house
are in bad shape.

Made several 2 and 4
minute quartette records. One
of the 9 minute records good.
Quartette marked well but no
better than last week.

Spred out Miss Fates on
Arca from Hansen & Dalibah on several
records with following results:

- #74 - Standard
- #44 - Fuller, louder & more sensitive
- open free
- #54 - Better Fuller than #74. About
as loud & sensitive.

57 - Loud as #74 - Clean - firm.
Speeds well - about same
fullness.

Played all the games over for
Mr. Hayes without letting him know
which precedes they were. His
comments as follows

- A - Thin & metallic (74)
- B - Full - stands out of horn
Solid. Loud (44)
- C - Quality about same as (B) (57)
but little weaker
- D - Fuller than A but not as
good as B & C, back in
horn (57)

5/20/5.

Tested out recorders & records made yesterday. One of the "Quartette" from Apollo records is good.

Tried experiment of adding photo stiff spring and lead weight to one of the regular recorders made up.

Effect was surprising. The springs make the records much louder & fuller.

Tried out same on #51 record using longer spring of .011" pen's wire. Effect same but not so pronounced.

Tried out same on record #51 - first with heavy weight. Apparently weakened record a little. Then used lighter weight. Slightly better results. Then, lighter weight with apparently still better results but record weaker here.

Starts Johnston personal
equation development for the machine.

5/21/15.

Tested out spring and weight
device on #57 recorder.

This recorder was normally
good. The spring & weight simply
made it bleat. Had some
difficulty restoring #57 to
normal condition.

Tested out this spring and
weight on recorder #47 (1"
diaphragm). Made it apparently
louder & fuller.

Ran Bartlett from Rigoletto
for Mr. Edison. He said it
was good in proportion &
balance but a little weak.

Made #47 recorder over to
try out spring experiment.
Tried up with several weights &
springs. The lighter of these seemed
to make the recorder a little louder
and fuller.

Tested also spring fastened to side
and pressing recorder diaphragm
toward wax. Clean record but
not remarkable.

5/31/15

- ① Loud-sharp-whistle
- ② Louder-not so sharp-still whistle
- ③ Not as loud as ①. About as sharp as ②
- ④ About as loud and sharp as ①. Whistle has stopped.

5/31/15-

#47

Brass & lead - Knife edge pattern
1" diameter.

Diphtheria of acetyl cellulose
0.015 thick from solution 1 part
C₁₂H₂₂O₁₁ + 2 parts C₁₂H₂₂O₁₁.

- ① Regular arm x 0.015" cap hole.
- ② Right wedge & spring added.
- ③ Regular
- ④ Spring fastened to side of lead.

6/22/15.

Mounted #47 recorded up with
needle supported by wire from
front in place of rear arm as
usual for surface test.

Does not subside as expected
and apparently gives very little
surface. Will continue this.

~~Reed~~ out ~~that~~ rearing, to
see if again, damp afternoon
changed them with following
results -

- #74 - Standard. Seeds & stands out
well.
#44 - Rounder than #74 - Stands out fine
& holds - trifle more full.
#57 - Slightly kinder than #74 - Almost
pump out
#57 - ~~TIGHTENED~~ - About as loud
a little kinder than #74. Fuller
holds.
#55 - About as loud as 74. does not
stand out as well - Fuller
#57 - Rounder than #55 - Fuller than
#74 and fuller as loud.

- #74 - Standard.
 + #51 - Louder than #74. Fuller. Holds
 about as well.
 #50 - About as loud as #74 - ~~Abundant~~
 as sharp but has not as good
 definition.
 #74 - Standard.
 #55 - About as loud as #74 -
 Much fuller. Does not
 hold as well.
 + #54 - Not quite as loud as #74 -
 Fuller. Holds better.
 #44 - Standard
 #48 - Loud - Does not hold as well
 - Fuller than #44 and twice
 louder.
 * #44 - As loud as 74 + Fuller &
 more natural. Holds better.
 Bows full - good natural

5/24/15

Wrote up report.
 Made up #54 reedow with
 aluminum disc saw cork cone
 to get ~~Edison effect~~.
 This turned out pretty well.
 Added light bak. weight and spring.
 Made it a little louder & fuller.
 Added heavier weight.
 Became still more loud & full.
 Taped out reedows on opposite
 page.

- ① About as loud as #74.
Holds much-voice sounds
a little sharp & whistly.
Little more muffled than
#74 - not as clear & clean
- ② Voice sounds better than
above. Holds a little more
clear. The difference
however is not great.
A very close match for
#74 in loudness and
quality. Stands out as
much or better than #74
and holds a little better.
- ③ Becomes noticeably fuller
and little louder than
②. Pretty good quality.

5/24/15.

#54 - Brass head - domed out -
1/4" diameter - knife edge
design.

Diaphragm of cellulose
nitrate (old film stock)
dissolved in 3 parts of
amyl acetate + 1 part
acetone.

- ① Cork Cone 1' x 1/8" with
aluminum disc 1' x .004"
on inside. Regular arm
and sapphire
- ② Added light weight spring
to above.
- ③ Put heavier weight and
spring in place of above.

- #74 - Standard.
 #85. Mf. Recording Dept Standard
 Triple sharper than #74. Stands
 out triple better - clear - clean -
 #44 - Much louder & fuller
 than Standard. Stands out
 much better. More sensitive
 & inclined to blast.
 #51 - Louder & more sensitive
 than standard - Fuller - Stands
 out well.
 #54 - Not as loud as #51 & #44
 but good - full and natural
 sounding well. Picked up
 piano very well.
 #55 - Good and full - natural
 slightly sensitive & inclined
 to bludge.

5/25/15
 Made up recorder #55 as next
 page.

First trial weak & sharp. Took
 down and added spring & weight.
 Makes it a little fuller but still
 sharp. On examination found that
 cork would touch on slight motion
 showing very little play. Made
 up new diaphragm & cone with
 thinner cork.

Reard still thin & sharp not
 loud enough but louder than
 before. Added spring and weight
 which makes it fuller but
 not as loud as #74.

Made further tests of recorders
 Max Seng's voices as per
 of 80000 page.

Full supporting needle arm from
 front with steel wire .011 & linen
 thread. In both cases reard
 had great deal of surface
 was sharp & unpleasant.
 Added 1/8" o.s.b. aluminum disc to
 make quiet. Reard still shows
 surface and is sharp.

5/25/15.

- ① Very low (not loud) sharp
- ② Triple more full.
- ③ Little louder - still sharp
- ④ Little more full - About as full but not as loud as #74.

5/25/15
#55 - Brass head - domed top -
1 1/2" diameter - knife edge pattern.

- ① Diaphragm of nitro cellulose (film stock) - .905" from solution 2 parts amyl acetate, 1 part acetone. Cork cone 1" x 1/8" (fairly heavy) and aluminum disc 1" x .004, flat on inside. Regular arm & sapphire.

- ② Added spring & weight.
- ③ Changed diaphragm & cone & disc - same as above except cone lighter & thinner.
- ④ Added spring and weight.

5/26/15.

Had recording machine cleaned
and new belt put on.

See about taking picture in
library for Mr. Edson and get
machine ready for show on
8th at Studio.

Got 4 heads from Taylor & began
on #56.

Records of Quartette.

Surprising results. #44 & #51
records fine on solo and on
piano records. Went all 6 pieces
on Quartette. Showed interference
on note. #74 records made
Quartette beautifully.

Took 4 minute recording with
Werners records #6 & #49. #6
muffled & not loud enough. #49
not clean & sensitive.

Made Kinetophone type records
with #51 Records. These were
very good and clear.

- ① Piano Test - Note fuller than #74 - About as loud, stands out well.
Voice Test - Fully as loud as #74 - stands out as well - Rheds better.

5/27/14.
 #56 - Brass Head - Knife edge pattern - $1\frac{1}{2}$ " diameter domed.
 Diaphragm of cellulose acetate from solution 2 parts CHCl_3 + 1 part $\text{C}_2\text{H}_5\text{Cl}$ - .0025".

- ① Cork cone $1\frac{1}{8}$ " on inside Regular arm & capphire.

5/27/15.

Got ready for vislin deception experiments. Stages got Mr. Johnson from Metzger's department as vislinist.

This test developed that deception was possible - as a number that looked in the door were deceived.

The following improvements were suggested =

- ① That actual plans be used to accompany to divide the attention of the audience and to cover the surface.
- ② Pianist and Violinist be provided with mirror of the selection that the singing as well as the tempo and expression be kept.
- ③ The chances for deception are increased by distance of audience because they can not follow so accurately, can not hear surface, chords and start of record and

because the sound is more natural
in loudness because the phonograph
carries farther, dies at distance.

- (7) Bow should be glycerined
rather than soaked to secure
silence on strings.
-

#

Piano-test

- ① Meakin Han #74w #56
Does not send out as well -
- not commercial
Voice test
Rotten surface - Meak - Back
in horn - N. G.

Made and
6/6/5-

5/28/5-

- #57- Brass head - domed top -
knife edge pattern - 1 1/4" diam.

Made and
6/6/5-

Diaphragm of cellulose
acetate from Solution parts
C₂H₃O₂ + 11 part C₂H₂ Cl₄
-.003"

- ① Cork cone on inside
1" x 1/8". Regular arm
and sapphire.

Sent to Geo. Kerns
5/29/15 as it is
quality he wants

- ① ^{same test} almost as loud as #74.
Ritter sharper, stabs more.
^{same test}
Not as loud as #74. Clearer
more distinct & hoarse more
c's few.

Sent to Geo. Kerns
5/29/15 as it is quality
he wants.

- 5/28/15-
#58 - Brown Head. Domed top.
knife edge pattern - $1\frac{1}{2}$ ".

Diaphragm of cellulose
acetic from solution 3 parts
C₂H₅Cl #1 part C₂H₂Cl₄
-003".

Clark Core on inside
 $1\frac{1}{8}$ ". Regular arm and
sapphire.

#44 - Big full, natural-sound
includ^g a little just a
little

#74 - Standard

#57 - Big - fuller than #74 -
held pretty well.

#54 - Fuller than #74 - about
as loud - little further
back in horn.

Cylinder #2

✓ #74 - Standard

✓ #56 - Little fuller than 74 -
about as loud - Stubs
out as well.

x #57 - Neaper than 74 or 56
does not stand out
as well - Not Commend

#58 - About as loud as #74
little sharper, also
fine.

5/28/15 -
Made up records 57 and
58.

Tested the following records -
with upright piano -
2 - #7 horns - 32" from piano
to 6" from floor. which results
on opposite page.

Voice trials with same on
next page.

Tried piano recording

① Upright piano - 2 horns 1/2"
from strings

② Grand Piano - 2 horns about
36" from center of strings

③ Grand Piano - 1 horn same
as before.

Of these A was loudest - good
② was softest - excellent recording
③ was louder than ② and
wavery - not as good.
Horns seems to improve
piano recording.

- # 74 Standard - Pleats slightly.
- # 54 - not as loud. More clear & distinct & holds well. ss fair, - not as clean.
- # 54 - Rotten Surface. - Neck Back in horn - N.Y.
- ✓ # 56 - Fully as loud as 74. Stands out as well - holds better than #74.
- # 54 - Not as loud as 74 - holds pretty well
- # 51 - Louder than any of the above - stands out well holds about as well as 74 -

May 24 -

5/29/15.

Arranged to shape cork cones on diaphragms more accurately and made several of these!

Arranged with Taylor about pencil font arrangement on the chronograph.

Tore down rearder # 57 & attempted to build new. Cracked Diaphragm.

Met Mrs. R. Millburn & Miss Millette Millburn, #3607 Chestnut St. Philadelphia, Pa. Mrs. M. Contrasts Mrs. H. Sopiano & pianist. Mr. E. engaged for experimental recording.

5/2/15
Decoration Day.

#74 - Standard.

#44 - Louder, fuller & more natural than #74.

#51 - Louder, fuller & more natural than #74 - not quite as good definition as #44.

#54 - Not as loud as #44 or #51. Fuller & more natural than #74.

6/1/15.

Worked on cork cones for recorders.
Worked on recorder #57.

Wrote up report.

W. Johnson and I with Miss Implied & music, tried out violin illusion experiment for Diamond Rec. Demonstrating. Seemed to be successful. W. M. R. & M. V.

E. J. see it.

Fred M. & Implied on imitating voice with cone. Delusion not good. Could easily locate difference between sound of phon. Miss I.

Fred & Implied recording with recorders #54, 44, 51, 54, with results opposite.

① Sharpen Hgn #74 - Further
 back in horn: Cleaner,
 better definition.

Made out 6/15
 See Book #3

#57 -

6/15.

Brass head - domed top - $1\frac{1}{2}$ " diam
 Knife edge pattern.

Diaphragm of acetyl cellulose
 from solution 2 parts CH₂Cl₂
 1 part C₂H₄Cl₂ - 1003". Head
 heated on stretching diaphragm
 otherwise it breaks.

Made out 6/15 -
 See Book #3

① Cork cone shaped to fit head
 $1\frac{1}{4}$ " $\frac{1}{8}$ " on inside. Regular
 sapphire and arm

Made again
6/5/15 See Book 3

- ① Much louder than #74.
Tuller. More surface. More
sensitive. - Has flanges
- ② (b) after tightening
not as loud and unpleasant
in surface as above. Tuller
than #74.

6/5/15-

#59

- Brass Head - Domed Top - $1\frac{1}{4}$ " diameter
Knife edge pattern.
- Diaphragm of acetyl cellulose
from solution of parts CHCl_3 , 1 part
 CaH_2Cl_2 - .0015"
- ① Cork Cone, shaped to fit head
 $1" \times \frac{1}{8}"$ on inside. Regular
Sapphire and arm.

6/2/15

#60

Brass head
6/10/15
6/10/15
6/10/15

Brass head, domed top - $\frac{1}{2}$ " diam.
Knife edge pattern.

Diaphragm of nitro cellulose
from solution in methyl acetate
002.

- ① Cellulose, shaped to fit head
 $1 \times \frac{1}{8}$ " - sealed inside. Regular
Sapphire and arm.

6/6/15.

Built up records 57-59-60.

attended meeting Engineering
Committee.

Saw to getting Kintophone
outfit put up in Glass Blg.
for show on the 8th.

#61

6/8/5

Brass Head-Domed Tap - $1/4$ " diam.
Knife edge pattern.

Diaphragm of nitrocellulose
from solution in amyl acetate
".00175"

- ① Cork cone on inside, shaped
to fit head. Regular arm
and sapphire.

- #74 - Standard.
 #57 - Sharper - further back in horn - cleaner - better definition.
 #59 (a) Much louder than #74. Fuller - more surface - more sensitive - surface unpleasant has fringes.
 #74 - Standard
 #60 - Louder - fuller - more sensitive - less surface than #74 - pleasant tone.
 #61 - Loud as #74 - fuller - holds fine - surface good - pleasing tone.
 #59 (b) Not as loud and unpleasant and has not fringes as (a). (trifle fuller)

6/2/15 -

Made up reeders #61.
 With Taylor testing out chronoscope.
 With Lawson getting Library model D Kinoscope in shape for Kinetophone show.
 Preliminary test of new reeders as per opposite page:
 Difference between (a) & (b) in #59 is that diaphragm was tightened more on (b)

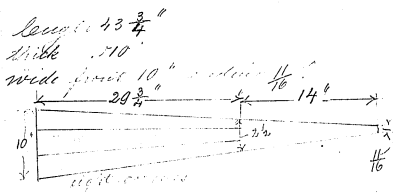
- Further tests on reeders
 #57 - Sharper & further back in horn than #74 - cleaner, better definition.
 #59 - Much louder than #74. Fuller - more surface & unpleasant - fringes.
 #60 - Louder - Fuller - more sensitive & less surface than #74
 #61 - Loud as #74 - fuller - holds fine. Surface as good.

[ITEM(S) FOUND IN BOOK]

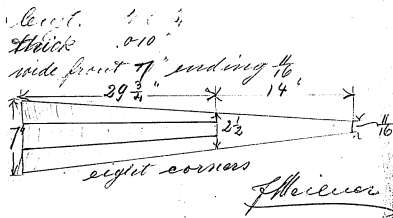
ARM
Order for MRA
#1.140.290 - Signal Horn
S. Seagrenville - 5/18/15.

[ITEM(S) FOUND IN BOOK]

Recording Horn # 1.



Recording Horn # 2.



[ITEM(S) FOUND IN BOOK]

Open.

#1 - Diminishes volume
Increases fullness

#2 - Diminishes volume } but
Increases fullness }
to less extent than #1.

#3 - Diminishes volume } but
Increases fullness }
to less extent than #2

#4 - Diminishes Volume } but
Increases Fullness }
to less extent than #3 -
very slightly

**Notebook Series -- Notebooks by Edison and Other Experimenters
Recorder and Recording Experiments -- A. M. Kennedy Books
Notebook, N-15-06-04.2**

This notebook is a continuation of N-15-03-17. It was used by Absalom M. Kennedy during June-August 1915 as a daily record of experiments and tests with phonograph recorders. The daily record is continued in N-15-08-02.2. The tests involve various recording machine parts, instruments, and positions of the recording horn. Some entries mention tests of the kinetophone, the "chronograph" and the "kinetophonograph," along with the storage battery search light. Also included are references to Kennedy's collaboration with Newman H. Holland and an experimenter named Taylor (probably Henry A. Taylor) on an Amberola home recording machine and his work for Miller Reese Hutchison on a microphone system. Kennedy's notes also describe other projects such as the preparation of a "talking picture show" for the Commissioners of the Chinese Republic and the training of Diamond Disc demonstrators, and they document Edison's own involvement in the phonograph experiments, including his comments, suggestions, and further instructions. Other individuals involved in the work include F. C. Burt, John P. Constable, Zachariah P. Halpin, Clarence B. Hayes, Archie D. Hoffman, John J. Riley, R. H. Simpson, and George J. Werner. Some of the tests and demonstrations were done on orders from Hutchison. The front cover is labeled "Recording Experiments Book #3. From June 4, 1915. To Aug. 2, 1915. Kennedy." The pages are unnumbered. Approximately 120 pages have been used.

6/15.

Finished up and tested out first model of chronograph.

Marks will except the leads. These will have to be of different colors and colored leads will be difficult to obtain. Will try blue points two different shapes to engrave the paper in place of marking points.

The attachment will be redesigned to make better looking and more compact.

Saw to getting Kinetophenograph put in Chapel. (Sawer's was drunken) and synchronized with projection machine. Also projection machine with new take up & synchronizer combined of greater put on.

Saw to getting outfit sent
to Office Bldg.

Saw Simpson about .008"
sapphires.

Changed # 59 recorder with
cork disc on top. Unfortun-
ately punctured diaphragm
before test & found on test.

Swartelle game. Made
on 4 good records. #6/
recording seems to stand out
better & more natural than
#7H.

Found that 3 horns record
better than 2 - being clearer
and more distinct, especially
in the baritone and alto.

Found that #5H recording
is badly buried - muffled
and not good.

Found that #51 record had
stretched 40-45 to be 100
percent. Will have to
watch these records.

Made up record for
that #61 against #74
announced "Record A" and
"Record B".

Record A = #74.
B = #61.

6/5/15.

Saw about getting telephone
outfit, cigaret horn synchronizing
outfit etc. & office Bldg.

Saw Mr. St. about repaired
paper for chronograph records.

Made #59 recorder over &
tested out. Taylor pronounced
it very good.

Got 3-.008" sapphires from
Herner.

afternoon

Changed #60 recorder from
2 min. to 4 min. & tested.
Sounds buried, too much
surface & little rattle.

- ① As loud as #74. Needs
better. Plans are all
full natural. Goes
rather a disc quality.
Acad for voice test.

#59. 6/5/15.

Brass/Lead - Domed Top
1 1/2" diameter.

Diaphragm of cellulose
nitrate (also film stock)
from solution in amyl
acetate.

- ① Cork cone inside 1" x 1/8"
shaped to fit dome.
Cork cone outside 1" x 1/8"
same as above
Steel arm, no foot.
to small piece of aluminum
on top of outside cork
cone. Regular Sapphire.

6/7/15.

Saw about phonetophone show
tomorrow. Get records.

Made up 4 min recorder #57.
This tested out very good - well
round natural, stands out
well.

Reset recorder #60 & tested out.
Much better. Little sharper.
~~than #57 & does not hold~~
quite as well but good
definition.

- ① Very fuel. Holds fine.
 Pumps very good. Voice
 little muffled.

6/11/15
 Tested this recorder out with
 Quartzite. Held but was not
 clear, clean, distinct. Very
 fuel & rather loud.

- ① Tested by Gey, Nerner
 Voice test. Little louder
 than 60 & firmer. Not as
 clear & clean as should be.

- ① Tested by Miss Ingram
 singing. Holds well but
 does not show up clear
 & distinct.

#57- 6/7/15
 4 min
 Brass head Damed Top
 1 1/2" diameter. Knife edge
 pattern.

Diaphragm of nitro
 cellulose. Red film stock
 from solution in amyl
 acetate. .0015"

- ① Cork Cone. Shaped to fit
 head 1 1/2" on inside
 .008 sapphire in aluminum.
 Regular arm, large feet.

① Sharper than #57
More surface. Does
not stand out as
well.

② Sharper than #57 but
not as sharp as ①.
Stands out better -
more clear. Does
not hold as well as
#57.

6/11/5
Tested out first with Mr.
Mayer on duplicating. Has
too sensitive. Not clear & distinct.

③ About same as above

④ Tested by Mr. Mayer, D.C.
Fair. Feel natural tone but
not clean

⑤ Tested by Miss Ingram smg
Not as loud as 57 but little
clearer. Fair.

⑥ Insufficient - not clean - Holds well
but lacks definition & clearness.

6/11/5
#60 Linlin.
Brass/Lead, Domes Top.
1/16" diameter, Knife edge pattern.

Diaphragm of nitrocellulose
(old film stock) from
solution in amyl acetate
.002"

① Cork Cone, shaped to fit
dome of head, welded
to neck of diaphragm.
.008" sapphire, regular
arm, large foot

② Resin needle flatter.

③ Tightened diaphragm -

6/8/15-

All day getting ready &
pinning talking picture
show for commemoration of the
Chinese Republic.

6/9/5.

Saw to fixing sul starter
and lamp for kinoscope
installation in Office Bldg.

Tested out the following recorders
4 min recorders

#57 - On voice too full & sensitive
On piano too sensitive,
shows interference.

#60 Voice & piano - sharper
than above though still
rather full. Better definition
than #57.

#57 (tightened) Less sensitive
than before. Little sharper
than before. Voice & piano
good.

Neither of these recorders are
good. Both seem bulky -
lack definition & clearness. Both
are full.

Voice Test Miss Ingram
"Drunk to me Only With These Eyes".

- #57 - Too full - barrelly. Lacks definition.
#60 - Not quite as full or as loud as #57 better definition but still not good.

Same Singing Bonny Dundee.

- #60 Lacks Definition - sounds barrelly.
#57 - Little louder & little better definition than #60.

Piano with 2 #7 Horns.

- #57 - Sharp - tin tanny - plunky.
#60 - Not as loud as #57. Little better quality - tho sharp.

Same with long Horn #2

- #60 Better. more natural - fuller. Yitter than before.
#57 - Louder than 60 - clearer cleaner feel - fair quality.

Same. Mixed play and
Prests March ady. could. Lead Pedal
Both Ratten. bad interference.

Same 77 km. raised &
further back from Peano.
Both still interfere. Ratten

Tried again. horn still higher
and further back.
Better than before but still
has interference.

6/9/55

Minute Records

Piano Test Miss Ingram
Playing Praelst's March, loud
but turbulent pedal.

#56 - Notes clear & distinct.
Much better than before.

Same with piano closed

#56 - Holds well. Stand out.
Natural. full

#74 - sharper than #56

Same playing Moszkowski
Scherzo.

#74 - Standard. Clear - sharp

#44 - Fuller. Louder. Stand out
- Springs a little

#59 - Little more full than before
but springs an loud
notes. Excellent surface

#61 - Fuller - louder - more
natural - sweet - Holds
well.

#56 - Little sharper than #61

not quite as loud but hoos
well & natural. Clear, clean
distinct.

Same Range Moonlight Sonata
#7 Horn. Close up. Focused
on strings

#61 - Fair pitched. Natural tone. Quite
fringy.

Voice Test - 3 minute.
"When the Corneth" Miss J.

#61 - True, true, natural, loud
hoos.

#56 not quite as loud as #61. Quite
sharp. Does not stand
out as well, loud or better than
standard however.

#44 Sharper than #56. Loud but
sounds on edge & liable
to go to pieces.

- #59 - Neaker than preceding.
Does not hold. Ruffles.
#74 - Standard. Sharper than #61.
Does not hold as well.
-

4 minute test

Same Conditions

- #60 - Not as clear & distinct
as 74-56-61 but better than
previous 4 minute tests.
#57 - Slightly darker & fuller than
#60 but not good as
2 minute recordings.
-

6/10/15.

Picking & testing Kinetophone
Subjects in Gas House.
trying out in office and
storing in vault.

6/11/15

Tried out telephone subjects
in Office Building with
Lewison in morning.

Facilities in afternoon.

Tried out #5 & 60 new
minute recordings. These are
hard enough to hold some but
lack definition & clearness.

Tried recorder #61. Heard
with first two limbs & began
to show ripples in third limb.
Afternoon very hot & possibly
celluloid stretched.

Tried new interpretation, giving
soprano & baritone more time
when singing 1/2 & notes.

#51 - Triple sharper than 57 or
60. Broad and solid. Hands
out. Clean. Not quite as loud as

57 & 60.
#57 - Triller & more barrelly. Does
not hold as well. Very full
& organ character sound.
Little rattling on piano

#60 - Full - barrelly, does not
hold. Louder than 51. Holds
piano better than #57.

6/12/15.

Taylor completed model of
self starter for Kinetophone
in Office Bldg.

Got 3 more .008" sapphires
from Nernst.

Miss Ingrid reports that of
the Victor records, 4 quarters
from Pigoletto, that Purple Label

Made up 4 min recorded
#51 & tested with #57 & 60
as per opposite page.

- ① Little sharper than
57 or 60 - not quite as
loud. Works better & is
cleaner & firmer.

6/12/25.
#51 - Brass Head, Domed Top. $1\frac{1}{2}$ "
diameter. Knife edge pattern
Diaphragm of celluloid (Rae
film with emulsion removed)
.0027".

- ① Cork Cone $1\frac{1}{8}$ " waxed on
inside of diaphragm. Regular
sapphir and arm.

- ① Sharp. clear-clean. beads fine. not loud enough
- ② Not quite so sharp, little louder, beads fine, good for special records by very heavy piano & blasty voice

6/14/15 - 4 min.
 #54- Brass lead. Domed Top.
 1 1/4" diameter. - knife edge pattern
 Diaphragm of celluloid
 (Roll film with lamination removed) .0028"

- ① Cork Cone 1 x 1 1/2" heavily waxed on inside of diaphragm. Regular sapphire and arm. .003"
- ② Same but with another cork cone. Stretched very tight with heat.

- ① Quality seems full, good
natural - seals & little
buried and not hard.

#59 - 6/14/15: Lamin
Brass lead. domed top.
1/4" diameter. Knife edge
pattern.

Diaphragm of acetyl
cellulose from solution
1 part $\text{C}_2\text{H}_5\text{Cl}$ + 2 parts
 CHCl_3 - .003"

- ① Cork Cone to fit, waxed on
inside. Regular arm
.008" aperture

6/4/15

- (59) Neck - Full, natural, some surface. Holds everything.
- (54) - Stands out better - better sharper fine surface. Holds everything. Pianos.
- (57) - Much louder - full. Pianos fine. Very loud & full.
- (60) - Not quite so loud - full but little finer. Interference with piano.
- (51) - Not as loud as 57 or 60. slight fringe from whistle.

Recorder #57 - Shows interference with quarts. particularly pians.

Recorder #57 - sharper but does not show interference not as loud as 57 but clear & distinct.

After listening to piano &
quartette through recording horn
there is no wonder that
records show interference.

6/15/5.

Tested out samples made from recorders yesterday and find:

- x #59 - Neat, back in horn.
- #54 - Clearer and stands out better
- #57 - Fuller, much louder. Will do perhaps for solo work.
- x #60 - Quality fairly close to #57 but does not hold so well.
- #57 - Not quite so loud as #57 but holds well.
- Give another try out.
- x Buied these over.

Took record of quartette made on #57 recorder over to studio to compare with their standard for loudness. It is weak and somewhat sharp. Not good enough in quality.

6/6/15.

Tested out last available reels & records for Kinetophone subjects.

Saw about getting ready for piano record of Mr. Herbert Fryer.

C. H. Halland Esq.
567 West End Ave
New York

Schuyler 5337.

Made these records which turned out good. Earned the following:-

- ① He recommends Mason & Hamlin upright piano as being one of the best in America on account of heavy padding of the keys.
- ② For recording, a piano should be played as an organ is, each note held down as long as it should sound and not released.

until the next one is to be struck. The strutting or pounding of hands up in the air touch should be avoided.

The pedals should be very carefully used - should be held down only during the striking of one chord or harmony and should be released & damped this out when the next one is struck to avoid interference and after ring.

Expression may be given with the finger touch as well as with the whole arm, open damper method and such expression is the more intense in its repression.

Tested out Storage, Battery Search light with Robinson at night.

6/17/15.

Went with C. Hayes to Halpin's department to test new type horns on phonographs.

Made piano record of Mr. Hoffman brought over by _____

Turned up cork cones for new records.

Made up and tested out record #58. First test showed back in horn & not entirely clean. Tore down & squeezed wax from between diaphragm & cork cone to brighten up.

Made over
9/14/15.

- ① First test showed nicked needle.
- ② Preliminary test holds well on piano. Triple sharp.

#58

6/17/15 Lmin.

Brass Head - Domed Top.
Knife Edge Pattern - $1/4$ " diam.

Diaphragm of celluloid (old
pos. film with emulsion removed).
.003" thick.

① Cork cone $1 \frac{1}{8}$ " turned to fit
dome, waxed on inside of
diaphragm. Regular arm
.003" sapphire.

Made over
9/14/15

6/8/15
Made own recorder #60

Geo. Perrow & Burt, hearing trials
of #74 & 61 recorders said 61
fuller & more natural.

Found recorder #58 too weak.
A possible was that the inside
work cone was too thick and
was touching the head.

Made preliminary tests on
4 minute recorders made up
as follows

- #60 - Fairly full. Speeds well.
Clean, clear, fairly loud.
- #59 - Not as loud as #60. Speeds
well. A little sharper &
cleaner.
- #57 - Very loud and full. Does
not hold as well as
others on voice. Good on
piano.
- #51 - Fairly - too full on voice. Good
on piano.

- ① Preliminary test with
Siano seems to be good.
fairly loud and natural.

6/18/15. Lmin.

#60

Brass Head. Domed Top. $1\frac{1}{2}$ "
diameter - Knife edge pattern.

Diaphragm of acetyl cellulose
from solution 2 parts $\text{C}_2\text{H}_5\text{Cl}_3$ +
1 part $\text{C}_2\text{H}_2\text{Cl}_4$ - .003".

- ① Cork Cone, turned to fit dome, used
on inside, $1\frac{1}{8}$ ". Regular
arm. .008" sapphire

6/18/15.

Mrs. Miss Millburn came in
afternoon.

Had to get Mrs. M. down to
earth to begin work and will
probably have to continue this
for several seasons.

With Mrs. M. playing "Annie
Laurie," made following tests:

#51 - Harlow. Too full. Ravelly. Piano
fine.

#57 - Sharper. cleaner. stands out
better. Needs better. Ramoood.

#59 - Heavier. Back in horn. Needs.

#60 - Stands out better than #59 - Clean
full - not as loud as #57.

Same closer and louder voice.

#60 - Needs well. Stands out fair

#59 - Slightly louder - Thinner - Needs
OK.

#57 - Very loud & sensitive. Rather
harshly.

#57 - Very loud. Blasts Very full.

#57 - ~~Shriller~~ lighter - Thinner than
before but needs better.

6/18/15.

Duet - Junata. Mrs & Miss W.

- #57 - Rather loud & dull. Shows slight interferences.
#60 - Needs better. Triple thinner. Stands out as well.
#59 - Thinner. Not as loud. Holds.
#51 - Big, full, louder than alone, holds fine.

Duet renders "Old Kentucky Home".

- #51 - Good & loud & true on singing. Sounds barely on speaking.
#57 - Stands out well. Clearer & thinner than #51.
#59. Stands out well. Clear, clear, triple thin.
#60 - Fuller than #59, stands out well. Holds well.
#54 - Stands out better than 60 - rattles little on high soprano tones.
#60 Fuller than 54 but not as loud & does not stand out as well.

6/18/15 -

Piano Test

- #60 - Fairly full but does not ring.
- #57 - Fuller than #60. Rings longer.
- #54 - Softer than #57 - Full - slightly plinky.
- #59 - Shows percussion. Plinky.
- #5 - Full, round, loud on piano.
Rarely on rice.

- ① Preliminary test - sounds good. Wheel - stands out - Chaw - Reeds.

6/19/15
#58 - Brass Head - Domed Top. Knife Edge Pattern - $1\frac{1}{2}$ " diameter.

Diaphragm of celluloid (Old Bell Film) .003"

Cork Cone $1\frac{1}{8}$ " waxed on inside of diaphragm. (Pointed Cone).

- ① Regular arm, .008" sapphire.

6/19/15.

Made surr x tested out parden
#58.

6/21/15

Note up report.

Raw Lindstone Photo for Owners
of the Arkansas and Party

With Mrs. Wellbeurn.

"Fuller than 60. Stands out a
little better. Clear. Needs well.

With Mrs. N. again after very full renders:

"Sharp on speaking voice of piano.

Buzzing voice sharper than S7 but
holds well and stands out."

With Miss N.

"Clear, clear, stands out." "Sharper
than S7 or S7 but not unpleasant"

With Mrs. Mrs. N.

"Fuller than 60 - More natural -
Needs well - No interference.

Mrs. N. (6/24/14).

"Hummer does not stand out
as well as S7."

Mr. Gelfert - Renitene

"Not as clear as S7 on voice.

"Fuller fuller. Piano better."

Mrs. N. (8")

"Clear - Clear - Stands out"

"Sharper than S7 or S7 but not
unpleasant"

With Mrs. Mrs. N.

"Fuller than 60 - More natural -
Needs well - No interference."

#59.

6/22/15
Brass Head - Domed Top.
Knife Edge Pattern - $1\frac{1}{2}$ diameter.

Diaphragm of Cellulose
acetate from solution, 2 parts
 CH_2Cl_2 + 1 part $\text{C}_2\text{H}_5\text{Cl}$, 003"

Cork cone made to fit dome
 $1\frac{1}{8}$ ", waxed on inside of
diaphragm. Regular arm
008 Sapphire.

#57

With Mrs. H-

"Very full & loud - barely - oo's.
Enunciation good. Plans good
& full.

"Very full & natural on speaking
piece. Plans very full & natural.
Singing voice full, natural, natural."

With Miss W.

Very full & natural. Clear. more
natural than the former recordings."

With Mrs. Mrs. W.

"Excellent & loudest. Brings out distant
plans much louder while not
increasing the voices very much."

Mrs. H. - Alice Samson & Dabbs.

"Full - Shows some interference.
Little rattles."

With Mr. Gelpert

"Very full - Natural. Needs a little
padding will be good for soft, low
voices."

6/20/15
#57 - Brass Head - Domes Top
Knife Edge Pattern - 1 1/4" diam.

Diaphragm of cellulose
acetrals (old robe film). .003"

Cork cone made to fit dome
1 1/8" waxed on inside of
diaphragm. Regular arm,
.008 sapphire.

6/22/57

Saw Riley, about instructing new men.

Ran kintophone show for Ray Daniels pens for M&M.

Made our records #s 57-59.

Received new 008 sapphires from Simpson.

Mrs. & Miss Wellbourn came and made records, using records 57-59-58-59-60.

- ① In the course of this recording, noted the following:

With a fairly insensitive recorder, the voice may be used closer up. This present then appears to stand out well and even though otherwise sharp, becomes more dull with the close up voice.

- ② In comparing sensitive with insensitive recorders, using voice close up accompanied by piano more distant, the loudness of the distant piano varied a great deal more than the close voice — that is the more sensitive recorder was more

easily detected by the distant
ears than by the close up
voice.

③ Sharp recorders seem to bring
out such overtones as make the
voice sound an octave higher
than so really sung. Dull recorders
seem to bring out overtones which
make the voice sound low
in pitch.

④ - note further -
With Mrs & Miss Millburn, first
tested proper distance of
recording them. This seemed
12" for Mrs & 8" for Miss M.

With Mrs M. at 12" tested following
#60 - Sharp on speaking voice.
Trifle thin. Holds well. Does
not stand out as it should
#59 - Fuller than #60. Holds out a
little better. Clean. Holds well.
#58 Fuller than either of the above.
Loud. Holds out better.
#57 - Full as 58 - Holds out but does
not hold as well. Shows
barely oos.

#57 - Very full & loud - barely - oo's
Equilibrium good. Piano good
full.

Miss Millburn - Ave Maria
12.

#57 - Very full natural on speaking voice.
Piano very full natural

#57 - Singing voice full, round & natural.
Piano out better, Miller
sharper. Piano little plunkier.
Holds well.

#58 - Further back than #57. Triplets
sweeter. Represents heavy notes.

#59 - Sharp on speaking voice & piano
Singing voice sharper than #57
but holds well & stands out

#60 - Shows o's. Miller sharp. Clean
stands out. Holds well.

Miss Millburn.
Last Rose of Summer at 8".

*#51 - Full. Loud slight rattles on
ascending notes. Full natural.
Subsequently proved voice &
not recorder caused the rattles. (C.B.)

- Duet - "Ave Maria" - Mrs & Miss N.
- #60 - Sharp - clean - not very loud -
no interference.
- #59 - Fuller than 60 - more natural
Heeds well - no interference.
- #58 - Full, but back. Flight pattern.
Louder than #59.
- #57 - Fuller than #58 more penetrating
- more natural & generally better.
- #51 - Fulllest & loudest - Brings out
piano much louder while not
unrelaxing voices very much.
-

6/28/57

With Taylor on Chronograph.

Set up new .008" needles in
aluminum arm.

Had Mr. Gilkint to teach
Diamond Disc Demonstrating
all afternoon. Made
records with him with
records 57-58-59.

- 6/24/14 -

Nick Hapkin on testing used for
3 and 4 minute recording.

Nick Mr. Gilbert - testing out
recorders and putting him in trim
to make records.

It is rather wonderful how a
voice improves after a few
phonograph trials. Probably
for two reasons: because he
loses of timidity, nervous-
ness, and more confidence
is obtained - because ~~the~~ ^{his} singer
sees their defects and is ~~on~~
~~the~~ ^{he} ~~gives~~ ^{is} ~~him~~ ^{himself} ~~to~~ ^{able} ~~correct~~ ^{to} ~~them~~
and does.

Gilbert remarked - that he never
sang such as rich voice before,
as proof of what the phonograph
had done for him.

Mrs. Miss Niffourn came
after lunch. tested recorders (m)

with Mrs. H. singing Aria from
Samson & Dalila.

- #51 - Full - shows some interference
little pattering.
#54 - Sharper & thin. Needs well but
not as loud. Clear.
#57 - Needs better - trifle sharper than
51. Stands out. Clear. Clear.
#58 - Not as loud. Does not stand
out as well as #57. Good
surface.
#59 - Trifle thinner. Does not stand
out as well as #57.
#60 - Sharper & thinner. Slight
patter. Piano thin.

Geo. Harnes came over. Changed
to #4 (small horn). This proved
very much fuller, curiously, and
makes one stand out while
diminishing the piano. Mrs.
H. sang just low & close up.
Changed to #7 horn. Mrs. H.
sang louder & further away.
made better records.

Wah Mr. Gilbert singing, tested
Naxes for help on home
recording.

- #51 - Very full. Natural. Holds
OK. This recorder will be
good for soft, low voice.
- #57 - Good - natural - true - holds
well - clean - clear. ~~Little~~
sharper than 51 but still
soft & mellow.
- #58 - Sharp. Stands out well -
clear - clear.
- #59 - Not as clear as #58 on
voice - trifle fuller - piano
better.
- #60 - About as full as #59. Holds
well. Piano does not show
out as well. Record does not
stand out as well as #57.

6/25/15
Buret up, recorder #53

This recorder is sharp & thin as compared with #57 and emphasizes what was noted that a dull recorder does not seem particularly louder close up but does bring out more distant sounds louder - while a sharp recorder, while apparently as loud close up, is very much less loud for distant objects.

Mr. Culbert came for more instruction.

Suggest that since the Diamond Disc is put out as a musical instrument and will go before musical people, send it first to them for the demonstration also. (the musical - it may be possible to get new hearing the Boston Conservatory, etc. at the same rate as our present demonstration)

Willent came over & sang again. #57 recorded which we picked yesterday as best showed up too. Feel with him & gave him ones. Tried out others and decided on #9 as better. They had him sing louder & from further distance when #9 became too sharp. #7 again best. Shows that Jennings is inversely as distance from the horn.

Quartette came promptly after lunch. Began with arpeggios - soprano - alto - tenor - baritone. Of these the soprano only was good.

Made trials at Quartette from Poglietti. These made were not up to standard - no one seemed in humor for it. Tried this from Faust four times and showed improvement. Reading was apparently weak and did not stand out. Believe this due to their not being close enough to horn as a subsequent record by Mrs. Rensen stood out well.

This matter of placing before the horn
is very important - the horn showed
he at the right right and the
finger at the distance. To get the
best results. The record was
otherwise he blamed incorrectly.
Record #57 showed little of
interference & punctuations. Made
other records with #57 which showed
up cleaner & better.

6/25/5 - Lmin.
#58- Broadhead - Knife edge
design - 1 1/2" diameter - flat
top.

Diaphragm of acetate cellulose
from solution 1 part C_2H_5Cl
to parts $CHCl_3$ - .0025.

① Aluminum disc 10/104006
Regular arm - .008" 2.075"
Sapphire.

6/28/15

Write up report.

Meeting Phonograph Record
Committee. Instructed to
develop Amberola 30 Name
Recording, getting good recording
not publish out of it.

6/09/15

Made up 200" sapphires in
arms.

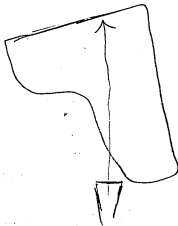
Marked with Miss Imgrund on
piano pendant. Found that
softer, clinging, pressure touch
gave better results than
percussive touch.

Got best results with
following arrangement =

Pendant # 57

Chain # 7

50" from floor
67" from music
table of piano



at night. ~~Tests out~~ pearl
made of Mr. Gilbert.
Very full & natural. Ring good
but not loud & does not
stand out as well as common
real pearls.

6/30/15.
Records of poor interpretation
with Hayes.

Not whistle out of recorder
#57. Tried piano record with
etc.

Tried out recorder #57 for
piano record. Both these
sound good.

Tried out home recording machine
- not made up by Holland for
Amurela 30 machine. This cuts
too deep due to too much weight
on needle. Needle also has
number of nicks in it.

Found also that recording
was done with .013" sapphire
& reproduced by .008" ball.

With Hayes judging machines

7/1/15

Teaching Disc Demonstrators.
all morning.

Mr. Edison brought in
correspondence from Philadelphia
concerning complaints by
Blake & Burkhardt.

Afternoon had Miss Ryge
for reading. She has a fresh
voice but with lot of tremolo
& no especial quality.

At night went over records
& correspondence about
Philadelphia trip.

7/15/15

Teaching these Demonstrators
all morning.

Got correspondence
ready for Philadelphia
trip.

Quartette came in afternoon.
Could not at first get any
records. everything blurred.
Tried changing horns distance
etc. At last lightened up
records & made good record
from recording stand point
but they did not sing well
together. Damp afternoon.
This evidently expanded
diaphragm.

Made record Miss Allie
Rensen & showed Mrs. E.
who said it was good.

7/2/15.

Morning Teaching Diamond
Disc Demonstrators

Afternoon - Examination Diamond
Disc Demonstrators.

7/6/15

Taylor finished up new records
had much ~~stop~~ to receive some
selling each time.

Got records, reproduces the to
go to Philadelphia.

Next to Philadelphia.

7/7/15

In Philadelphia.

7/8/55

Wrote up report & correspondence
about Philadelphia trip.

Worked on home recording.

Mrs. & Miss Melhorn in afternoon.

Testing following records:

#54 - ~~Roll~~ surface - Full - Smooth -
Velocity.

#57 - Quite different difference -

#57 not quite as loud as above

#58 Rubber, fuller & bit more
surface than #57.

#59 - not quite as loud as #58
but clear & distinct.

#60 - Deep in horn. Not as loud or
as the others. Clear & distinct

7/9/15.

Worked with Taylor on home
recording.

Made up special record #64.
~~2 better sets~~

Tested out all recorders for
quartette in afternoon.
Found all recorders - good. The
clear dry day strikes the diaphragms.
Made records with #59 having
Hayes about 8" - Mrs Renson about
15". Miss Fatis about 12" & Applegate
about 10" from horns. Balance
same pretty good. Records were
louder and stood out better -
clearer than any 4 min records
previously made.

A peculiar thing about these
4 min recorders is there is no
tendency to bleed in them.

7/10/15.

Saw rings who will come
Wednesday afternoon.

Saw Curtis about teaching
supervisors

Saw Mr. Maxwell about teaching
Rayd x Curtis.

Saw Mr. Edison about flabby
stretched diaphragms.

Worked on Home reading
with Taylor.

7/17/12

With Dolphin & Hayes, testing
reproducers.

Set up to run picture for M. H. A.

Got out Mr. E. G. R. film for
M. H. A.

With Taylor and some Banders.

✓ With Curtis (Superman) testing
Berliner & Edison systems of
recording.

Mrs. & Miss Welbourn came.
Had Mrs. W. sing as she pleased
Samson & Delilah. She has
never done it at all, good
her way or any other.

Rail Talking Pictures for
Mr. Durand. Mrs. W. sang
on return.

7/13/15.

Accumulating information for
writing directions for adjustment
of height of reproducer on
Diamond Disc Machines.

Rich Taylor on ~~former~~ recorder
for Amherst 30.

Writing report.

Arranging reproducer so that
arm is parallel with, above &
below parallel with record in
reply to Mr. Edison's note.
Found that some reproducers
blasted more than others. That
with the arm down the record
is more inclined to blast,
~~is~~ sharper & squakier than
when arm is parallel with
record.

7/14/15.

Nich. Taylor on Home Recording

Experimented with reproducing arm parallel, up and down & reported to Mr. Edison.

Made over Records #60 & tested out. Thin & weak. This record was made with diaphragm coated with vasoline to preserve from moisture make permanent for all weather.

Experimented with Piano recording with Mas. Imgrnd. Experimentation one of Chopin's Scherzos proved conclusively that the latter, clinging stroke records much better than the quack, fencer's stroke. On Chopin's Nocturne in E^b worked to improve Miss D's technique by evening up loudness of left & right hands.

- ① Sharp and not loud
enough. Will lay away
to scratch.

#60 - 7/11/15.
- Aluminum -
Brass Head - $1\frac{1}{4}$ " diameter.
Domed Top - Knife edge pattern.

Diaphragm of old, red
film stock celluloid .003"
Given thin coating of vaseline
to protect from moisture.

- ① Cork cone, turned to fit
dome, waxed on inside
Regular arm offset - .008"
Sapphire.

7/14/5.
#62- (made 7/9/5) - L min.

Brass head. Knife edge
pattern. Domed top.
1 1/4" diameter. Spherical taper
from ferrule to opening.

Diaphragm of celluloid
roll film stock - .005".

Cork cone 1" x 1/8" waxed to
inside of diaphragm. Regular
arm of fork .005" sapphire.

7/27/4.

Instructing Riley & King - palomen
for new Edison Shop in Syracuse
on Diamond Disc machine all
day.

7/16/15.

On Home Recording with Ambrosia
30 machine

Day damp & rained. Expected
records would not be good
~~so~~ got some Calcium chloride
absorption cells & put them
up in sealed tin can.

Waxed on reproducer for
Hayes. Gave it coat of vaseline
to protect it against moisture
or weather.

Sanatella came in afternoon.
Made several records some
of them good. One ready to
mould. Made also records
of Miss Kansen singing
Massenet's Elsie. Made
records of 4 pub. from Hayat.
Machine went bad on these
with no capable of being played.
Made also record of Miss Kansen
"Are you from Denmark" "Dahleh" good.

7/17/15.

Worked on Home recording
with Ambrosia 30.

Finished up with King & Seelye
on instruction.

Cylinder reproducers for M.P.H.

Taylor on stringing horns more
conveniently.

Note up instructions for
setting height of reproducers
and Diamond Disc Phonographs.

Wrote up report.

7/19/15.

Made our recorder #57 with
varielined diaphragm.

Marked with Taylor on some
recording on Antaresa 30 machine.

Tested out the following recorders

#60 - Rather, sharp. Loud - bells well
plunky for piano.

#57 - fuller & more natural

#59 - fuller than 60 - little louder &
more natural.

#62 - fuller & more natural than
any of the above.

#57 - loud, full, natural, will make
good piano records.

#57 - not quite as loud as #57 -
natural & true however - sounds
like 60.

#57 - sharper than 57 - bells well.

Ran Kinetophone show for Mr. E.

Tested out voices Mr. Head &
accompaniment.

7/20/15.

Made out #57 recorders.

Discussed Sellers and Dealers
convention with Mr. Maxwell and
Mr. Breton.

Marked with Taylor on some
Recording on Amersale Co
machines.

Mr. Impey came in afternoon.
Tested out the following recorders:

#62 - Stands out well - clear -

natural.

#60 - Fuller - Does not stand out
quite as well. Pups.

#59 - Good & full. Not quite as
loud as above.

#58 - Clear. stands out well.

#57 - Sharper - not so good.

#54 - Loud. Stands out

#51 - Finest of all but
responds to Bb of piano

also tested notes

Miss Inggrund played Tschairowski's
Chanson Rustic.

① Regular #7 Horn, regular distance.
Sounds good, clear, clean,
brilliant.

② Changed to 2 Horns #7's.
More muffled & indistinct, not
so good - not so clear & brilliant.

③ Long horn #1 close up.
Little bigger & fuller than small

horn but not as clear & clean.
④ Long horn #1 back at regular distance
Big - fuller than (1) and cleaner
than (3).

⑤ Horns 15th away - Long Horn #1.
Little weaker but full.

⑥ Horns 15th away - Telephone Horn.
Horns very good. Clear, round
clean. Voices, both talking &
singing very much. Horns very
natural.

#57-

7/28/15.

~~4 minute~~ Barium

Brass & Lead - Domed Top.
Knife edge pattern - $1\frac{1}{2}$ " diam.

Diaphragm of celluloid (old roll
film stock) .003".

Cork Cone $1\frac{1}{8}$ " moved to inside
of diaphragm. Regular .003"
aperture and arm.

Diaphragm coated inside and
out with vasoline to prevent
weather changes.

7/2/15

With Taylor on same Recording for
Amherst 30.

Took down #51 Reesman & Reesman
with vaselined diaphragm.

Miss Imgrund came in afternoon.
Tried piano recording experiments.

First with Grand piano - one
horn. Then up right piano &
two horns. Made several trials
to get distance. Tried
records 62 & 57. #62 was
crisper & clearer but #57 was
fuller & more mellow & round.
After a number of trials
obtained good result with #57.
Then it began to ~~part~~ ~~and~~ ~~and~~
never get it right again though
#62 continues to make good
records. Then went in music
room & studied Quartette from
Regatta with Mrs. J.

7/27/15.

Toni down records # 57, which
rattled yesterday and built over.

Deley came in. Spent some
time getting information of trip of
his to Asallon Co. & Babson Bros.
giving him information on comparis-
ons between Victor & Edison records.

About Asallon he states -

① That these people take occasion
to knock Diamond Disc
principally, stating that
it is impossible to get
records, that the diamond is
simply a talking point that
the waves of the vertical cut
are more liable to be proved
out than in the lateral cuts.
Also that they are bringing out
a new and harder needle
to play 50 times and another
which will play 500 times.

About Babson Bros., he states
that a Mr. Reinson (?) showed

him the Diamond Disc and that
it blasted and here some later that
almost all of the machines blasted
and that he corrected it by banding
the horn gun & limit pin because
this was the quickest way.

Mrs. Schreanus came in afternoon.
Tried reedy #51 with him. Was
too full. Tied #62, seemed to
be good.

I saw Coat Song from La Plata
and Rando Ariz from the Mesquite.
Seemed to get good records.
Sent them back north for
masters and blue records.

Tried Miss Ingram on
Rando Capriccio, too #7
Kerns, Upright Kerns. Seemed
fair but found blast in last
one.

7/23/51

Made and Reckw #57 with
vaselined diaphragm.

Judged horns for Halpin with Keys.

Fixed up returned machines
for Riley.

Fixed Long Diamond Dice Reproducer
for Conchable.

Inartette came. Studied Victor and
ans Inartette from Rolyette. Made
3 - not good enough for blue-
Personalities in each. Made
a Gino's from Aunt. Not good
Hans went to take funds to see
new recording funds as used
must take as minor.

Fixed Hermann's Long & Looking
Diamond Dice Reproducer.

7/24/15.

Experimenting with Constatals
on loud Diamond Disc Reproducers.

Get Reproducers & Testers out

#23094 - #23063 - #23022

18683 are softer - not as loud -
fuller & triple more muffled
not so well as N. (look at
Hayes Standard).

#9046 & #23081 are triple louder
than above but quality not
materially changed.

#23063 made up - Condensate
(or Bakelite) on card. One waxed
to diaphragm.

Marked with Constatals on
Condensate diaphragms -

19683

7/26/15.

Discussing condensate Desc Diaphragm

Mrs. Smith of Montgomery, Ala came
for voice trial. Was not in good
condition for trial. Voice rather
weak & shaky.

Made up loud reproducer # 18683.
Link with sheller matted in. Seems
best of lot. Took up to Reaso
to test out. Developed slight rattle.
Brought back and waxed top of
link more firmly to cork &
cone.

Made up # 23094 as above.
Rattle louder & clearer than above.

Made up # 23046 as above.
Rattle louder than # 23094.

Made up # 23022 with metal
link. Sounds like # 9046.

CLCJ

7/27/35.

Tests of Link operating Diamond Spine.
Reproducers Shew:

Principle defect is slack:

This may be overcome by

① Seeing that the clamping rings
are tight.

② That the levers between link and the
button ring & diamond lever are
fitted with wax so as to have a
joint with no loose motion.

That the leverages may be right the
shells are and must be straight.

This may of course be insured
by oiling the cord when
applying the last Shellac.

A metal link lever as well as the
shellac cord.

Tests seem to show that the
reproduction of any thing improves
the quality of voice & some
voice records - especially the
order as it gives it a more
natural ring.

7/27/15
Note up report.

Made up recorder #62 with
condensate on Japanese paper
diaphragm. This seems to be
fine. The recorder has very
natural quality, no squeaks or
rattles - is full but not tubby.

Made up recorder #60 as
above ~~tested out~~

Regan Recorder #58 as above

7/27/15-

Preliminary test: This recorder seems very good. Voice natural, stands out, full, no squeaks or rattles or other noises.

#62 - 7/27/15-
4 minute Recorder.
Brass & Lead, Damped Pap.
Knife edge pattern, $1/16$ " diameter.

Diaphragm of Japanese Paper
dipped in condenserite transfer
varnish & dried, .0035".
Cork Cone, $1 \times 1/8$ "; turned to
correspond with dome,
 $1 \times 1/8$ ", wetted with alcohol
and then stuck to diaphragm.

Regular .008 sapphire &
aluminum arm.

#60

7/27/15

Preliminary test - Little
more sure than #62 on
premixed page, very good
surface, natural, no squeaked
or rattles or other noises.

#60 -

7/27/15

L minute record.
Brass head, domed top,
knife edge pattern, $1\frac{1}{2}$ " diam.

Diaphragm of Japanese
paper, impregnated with
condensate transfer varnish,
& dried .0025". Cork cone,
 $1\frac{1}{8}$ ", turned to fit dome,
filled with alcohol, then
fastened to diaphragm.

Regular 60° cap-phre with
regular aluminum arm.

- #62 - Syllables better than 60.
Generally fuller & more
natural. Piano good
of full & round. Does not
sound as big as #58.
- #70 - Syllables pretty good. not as
big or loud or full as 58
or 62. Piano little weak
& thin as compared with
58 or 62.

7/28/15

Finished up records #58

Testing out records finished up
as follows

- # 51 - Very full & sensitive, little
rattley. Piano full
- # 53 - Sharper & stands out better than
51 but rattles & makes piano
sound plummy
- # 54 - Bigger & fuller than 51 - stands
out better than #51 - Piano
pretty good.
- # 57 - Not quite as big & loud as #54
particularly on voice. Piano
pretty good.
-
- # 58 - Sounds like 53 & syllables fine.
Piano, big full & natural,
best records so far.
- # 59 - Triple sharps & does not hold
as well as #58. Piano not
as big & full & natural.
- # 60 - Not quite as big & full &
round as 58 on voice &
does not sound syllables
so well. Good on piano.

7/28/15
#58 - 4 min pearles
Brass head, domed top,
knife edge pattern, 1/4" diam.

Diaphragm of Japanese Paper
impregnated with concrete
transparent varnish & dried, .008"
Cork Cone 1 1/8" shaped to
fit dome, wetted with alcohol
& attached to diaphragm.

Regular .008" sapphire with
regular aluminum arms.

#48 - Good, full & natural though
not so big as #58.

7/28/15
#48 - 4 minute powder
Brass Head - Knife edge
pattern $1\frac{1}{4}$ " diameter.

Diaphragm of #1207
condensate varnish on
japanese paper & airtight,
.0038".

Disc of aluminum
 $\frac{7}{8}$ " x .006" fastened to outside
of diaphragm by wetting
with alcohol.

Regular arm with .008"
sapphire.

#44 - Good & full. Same
surface. Not as good
as #58.

#44 - 7/28/15 -
min recorder.
Brass Head - Knife edge
pattern - 1 1/2" diameter.

Diaphragm of Japanese
paper impregnated with
#1207 condensate varnish.
.0037" thick.

Aluminum Disc 7/8" .008"
fastened to outside of
diaphragm by setting
with alcohol.

Regulus arm with
508" sapphire.

7/28/15

Had Miss Alice Carey up in afternoon to sing and tested out the following records:

- #59 - Used as standard.
- #44 - Pronunciation - syllables much more distinct. Voice natural & true. Piano good.
- #48 - Voice more natural than #44 - Best of lot in this respect. Piano little loud & inclined to interfere.
- #60 - Makes voice sound triple juvenile. Piano underlines - too sensitive.
- #62 - Fuller. ~~wholes~~ better than 60. No interference. Piano natural.
- #58 - Punks out well. Loud, natural. Piano good - Punks much #48.

These records, made from Japanese paper, are ~~pregnate~~ with condensation which does not get hard

and elastic, are the best
records I have yet made.
The voice is heard as more
natural than with any other
records yet made.

Believe this to be due to the
absolutely "live" or without
spring nature of the material
so that it responds readily
to any sound waves and
does not add to these any
vibration of its own.

7/29/15.

Found a bug in #58 records
of yesterday and in attempt to
correct destroyed diaphragm
and had to build over.

#60 Records of yesterday
was not good so built over.

Had Mr. Head & Mrs. Mickle out
in afternoon. Made films of
voice records with new pendu-
lums best with #58 & seemed to
show up nicely. Necessary to
hold voice back to about 5".
Shows fair. These records are
very much fuller than corresponding
but his cellular records but
have very natural tone, very
little surface and not tending
to squeak.

#60 - 7/29/15 -
4 minute recorder.

Brass head, domed top,
knife edge pattern, $1\frac{1}{2}$ "
diameter.

Diaphragm of Japanese
paper, impregnated with
condensate transfer varnish
#1207 and dried .003".

Cork cone $1" \times \frac{1}{8}"$, turned
to fit dome, inserted with
alcohol and thus fastened
to diaphragm.

Regulus arm with .008"
sapphire.

7/29/15
#58 - 1 minute recorder.

Brass stand, domed top,
knife edge pattern, $1\frac{1}{4}$ "
diameter.

Diaphragm of Japanese
paper impregnated with
#1207 condensate transfer
varnish & dried, .0023"

Cork cone, $1\frac{1}{8}$ " turned to
fit dome, wetted with
alcohol and then stuck
to diaphragm.

Regular aluminum arm
and .008" sapphire.

7/30/15.

In New York experimenting with
loud speaking reproducer for
Park Commission.

Determined that our new stiff
arrow paper-cone is a little
than ordinary but not loud
enough for Park exhibition
until noise around.

Had Taylor made up new
reproducer outlined by Mr. Rot
Raising top of dome filled with
cotton & turned to first position.
mica diaphragm

Night - Experimenting with Automatic
loud speaking Telephone system. This
is very loud but requires attention
and adjustment.

7/3/15.

On orders of MPT, experimented further on loud microphone system.

Experimented on Musie Martin Horn with stationary flat top mic-diaphragm reproduction. This is louder and clearer than the regular reproduction.

Mr. Edison turned down the microphone system on account of lack of fullness, & quality.

8/2/15.
Started Taylor on Chas Edison's
machine with MusicMaster Horn
and Mitchisons loud speaking reproducer.

Made up record # 53 as per
next page and tested out:

8/2/5
#53 - 4 minute render
Brass Head, Knife edge pattern 1/4".

Diaphragm of Japanese paper
impregnated with cerussate
#1307 transfer overnick and
dried. .0025"

Aluminum disc 7/8" x .008" on
outside

Regular arm 3/8" x .008" x .008",

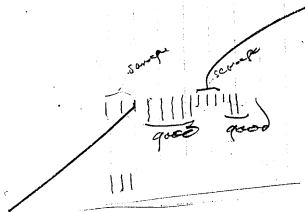
#55- 8/2/15
1 minute Record.
Brass Head, domed Top,
knife edge pattern, $1\frac{1}{2}$ "
diameter.

Diaphragm of Japanese
Paper impregnated with
#1207 Condensate Transfer
Varnish .0032" thick

Cork Cone $1\frac{1}{2}$ " turned to
fit dome, cutted with ~~Chisel~~
& thus stuck to diaphragm.

Regular aluminum arm,
6081 Sapphire.

[ITEM(S) FOUND IN BOOK]

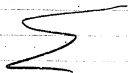


**Notebook Series -- Notebooks by Edison and Other Experimenters
Recorder and Recording Experiments -- A. M. Kennedy Books
Notebook, N-15-08-02.2**

This notebook is a continuation of N-15-06-04.2. It was used by Absalom M. Kennedy during August-September 1915 as a daily record of experiments and tests with phonograph recorders. The daily record is continued in N-15-09-17. The tests involve various recording machine parts and instruments and variations in the positions of voices, instruments, and recording horns. Kennedy's notes also describe other projects, such as his work for Miller Reese Hutchison on a wireless telephone system and his presentation at a phonograph jobbers convention, and they document Edison's own involvement in the phonograph experiments, including his comments, suggestions, and further instructions. One entry describes Edison's specifications for the "ideal" recorder and includes a drawing by him, which has been taped into the book. Additional comments and instructions by Edison have been taped onto the first page of the book. Other individuals involved in the work include Zachariah P. Halpin, C. D. Ries, and experimenters named Parkhurst and Taylor (probably Henry A. Taylor). Some of the tests and demonstrations were done on orders from Hutchison, Jonas W. Aylsworth, or Charles Edison. The front cover is labeled "Recording Experiment Book #4. From Aug. 2 To Sept. 16." The pages are unnumbered. Approximately 140 pages have been used.

What I am after is to see
how ~~much~~ far a singer
can go from the funnel &
yet give the same volume with
a small light funnel which
should not change quality

This should permit ~~us~~ us
to get loud choruses work



I make the flares comparatively
large to get both sides
of the waves by reflection



Aug. 2, 1915. contd.

Miss Ingmund came in afternoon.
Seated out records as follows (Miss
Sorenson follows in each case.)
1st Piano - Chanson & recs.

#70 Used as standard (#70 standard)

#44 Fuller. weaker but more natural
- bell like. [fuller, more mellow,
no so brilliant]

#53 Sharper than #44 - little more
plummy but fuller than 70 [same
as 44 but not so clear, & a poor]

#55 Tender than 44 or 53 - better &
cleaner & stands out better [tender,
not so mellow]

#58 Trier sharper than #55 - Clean-
plums out well - fine - natural.
[Not as mellow as 44 - silvery,
more tone especially in lower,
upper hand and thin, more
mellow than 55]

#60 Little further back than 55 or
58. Needs more - not as loud -
[True - a little twang & rapping]

#62 - Stands out - Needs well.
perhaps not as loud as 53.
[not as sweet or even so
twangy - a little - not as loud
as 53]

#57 - Voice sounds nasal in
comparison. Plans good but
sharper than above. [Sweet
not very clear]

#52 - Voice little more muffled.
Plans very good. [Sweet].
mellow. Not much tone - thin
given]

#54 - Voice & plans sharper than
above. Loud. [Not as sweet
twangy]

#57 - Not as loud as 54. Little
deeper but shows percussion.
[Full - twangy]

#58 - Clear - not as loud as 54 -
clear & distinct - little plenty
[Full - a little back - twangy]

Decided that for plans the
records were best in order
named and these were
again tested:

#52-55-62-58.

#52- Little weak & break in horn.
Quality plenty.

#62 Voice louder & stands out
better. Piano little less full
ring but clear & distinct.

#58 Voice piano not quite as
loud as 62. Piano about
same quality. Clear & clean.

#55 Louder & stands out better than
58 or 58, not quite as full
was much ring as 52 but
clear & distinct.

With true scales - parallel &
sawtooth on 55 & 62. In
conclusion.

Voice test.
Showed 62 & 55 clearer than
58 & cleaner.

Aug. 3, 1915.

Wrote up report.

Made records & tests of
Mrs. _____ from Kansas.

Ran talking picture for
Aylesworth.

Finished up photograph with
Miss Martha Kern for Chas E.

Began on Record #50 with
Gold Beater's skin diaphragm. This
is too weak & flabby. Tore
down after finishing.

Had Mr. Edison listen at
Grandford RST - said improvement
but the percussive sound was
pronounced.

Quartette from Repetto. Best Helena
and singing but poor recording.
Song from Magot. Little Vanquereux -
Fine. Piano especially good.

Aug. 4, 1915.

Made up rearder #50 with drum
head & tested out. Very loud.
Will need more testing to determine.

Mounted up .008" sapphires in
arms ready to use.

Mr. Stead and Mrs. Mickle came
out. Made new piano record
of Mrs. Mickle. Made record
also of Stead.

Steads record with rearder
#58 - Mrs. Mickle with
#50.

#50 very loud but inclined to
pitch. Probably because no
disc or other center drum.
#51 not so loud & not inclined
to waver.

1st test.

Seams loud & rather full.
Rattles a little. need
further test to determine.

stands out fine.

Aug. L-15
#50 - 4 minute recorder.
Brass head. Knife edge
pattern - $1/4$ " diameter.

Diaphragm - old drum head
marked "Porpoise" - .0045"
thick.

Regular aluminum arm
and .008" sapphire.

Aug 5, 1915.

Made up Record #41

Took up MPT wireless telephone
with Mr. Kehr.

Made up record #37.

Mrs. Johannes came for test.
Had cold. Made trials with
several records. They were
not very good.

Miss Alice Carey came for
trial. She does not record
well. I do not know why
as her voice sound clean
& clear - fresh ordinarily but
so sharp and not very
pleasant recorded.

With Mr. Malwood on
discussion plans for Jobbers
convention next week.

#41- Preliminary test - Sharp
and weak - Too weak for
use

#41- ^{8/5/15}
4 minute record.
Brass head. Knife edge
pattern - $1\frac{1}{4}$ " diameter.

Diaphragm old drum head
marked "Perseus" - .0047
to .007" thick. Aluminum
disc $\frac{7}{8}$ " x .008" waced on
outside.

Regular aluminum arm
and .008" sapphire.

#37- Preliminary test. Sharp
and very weak N.G.

8/6/15.
37- 4 minute recorder
Brass head - triangular pulsed
gasket pattern - $1\frac{1}{2}$ " diameter.

Diaphragm - old drum head -
marked "Porpoise" - .005-.007"
aluminum disc waxed on
outside $\frac{7}{8}$ " x .008".

Regular aluminum arm with
.008" sapphire.

8/6/15

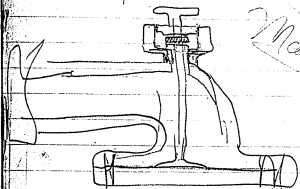
Taylor finished up new recording heads with advance ball arms arranged for DISC as well as cylinder recording.

Made up #66 record from one of these with drum head diaphragm.

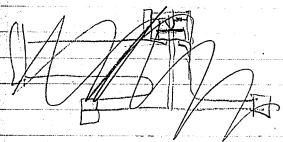
Talk with Mr. Edison on records. He outlined specifications for the ideal record he wanted: - One that will respond readily to soft sounds but will automatically fail to respond proportionally to loud sounds.

Said a substance like flexible stone which would give just so far and then stop would be necessary. That the physical motion of the diaphragm was so slight that mechanical means for describing this

27



Make



Revised
m.v.g.



proved probably be a failure.
Outlined one scheme.



Double diaphragm, strut
fashion so that the elastic
arm will hold up further
motion.

Also sketched attached
sheet on opposite page.
This will have to be resketched
and made practical.

Quartette came in afternoon.
Singers in good condition but
distractions made a rather
unsatisfactory afternoon's
work. Mrs. Kurbens work
especially good. Telephone,
others in room talking &
taking days away make
such work here unsatisfactory.

Made four quartette records
and two two. latter very loud

as Miss Rensen was singing
her best.

Used record #66 as it seemed
a little clearer & cleaner.

8/7/15

Looked after MPT Wireless
telephone Designed new coil.
Oiled out coil Melburn made.

Set up .008" style in arms.

8/9/15-

Made up recorder #64.

Got up material for talk at
Convention.

Made talk & discussion at
convention.

8/10/15

At Convention practically
all day.

8/11/5

Expected dealer to make
trial record. Did not come.

Tried records & piano
recording with Miss Imgrund.

#57 - Quite louder & sharper than 64

#64 - Not as loud as #57. Fuller, very
quiet.

#66 - Louder than either of above.
Carries ring of piano longer.

Tried again with
upright piano. This instru-
-ment is very much out of
tune.

#57 - Much more natural than
upright piano.

#64 - Softer, not so much ring.
Hoarseness or deadens down
ring.

#59 - Sharper on both voice
& piano.

#66 - Louder than 58 or 64 &
carries ring more.

Tried very soft touch on
peans.

#51 - Very soft. Too low for
commercial recording.

Brought peans closer to horn -
within $1/6\frac{1}{2}$.

#52 - Better, fuller, sweeter
than before.

Tried then Farantella with
holes 9" & bass 11" from
horns.

#53 - better than before on
low high treble notes.

#54 - Once trial - Miss Ingrid
singing part of aria from
Hansel & Gretel

#55 - Natural -

#56 - Very sharper & stands
out better.

#61 - Natural, but sharper

than #51

#66 - Louder & little sharper,

#44 - Excellent quality -
loud & clear -

Miss Ingram then tested
various methods of
using voice.

Aderson - went to new
York to get flexible tubing
from Dr. S.

8/12/15.

Mr. M.G. Armagost came in morning for voice trial. Sang "Father, Where We Rook". - Has good loud voice, little throaty, but shows lack of practice and forcing.

Finished up records #65 and tested. Showed up too sensitive & loud. Blentyn.

Miss Ingrid came and brought violinist, Mr. Dancings.

Both made trials of records

#58 - Very natural - Good both on violin and piano.

#44 - not as loud as 58. Shows tendency to squeak.

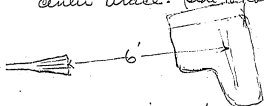
#66 - Rattle sharper & cleaner than 58 but not so natural.

#59 - Sharp - weak - small on violin as compared with 58

Mr. Head and Mrs. Mieske came over in afternoon.

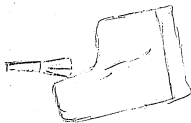
Practised out on piano recording

- ① Piano at 6', horn to large center brace. side to horn



- ② Same position but closer
Horn 4' from brace

- ③ Piano in line with horn



Result showed ③ much better
clearer & more distinct than
① or ②.

Then tried making records with
upright piano and two horns.
This showed up better from recording
stand point than with the grand
piano but this old upright
piano is out of tune and rattles
badly.

Made up master for blue
record.

8/10/15

- ① Too sensitive and loud for piano. Very loud & tendency to blast on voice.
- ② Very sharp-creak-high pitched. Piano little & tin panney.

8/11/15.

#65. 1 minute recorder.

Bases & lead. Domed top.
Tapered tube. Knife edge pattern
 $1\frac{1}{4}$ " diameter.

Diaphragm two thicknesses of Japanese paper coated with shellac, placed together and between two sheets of dry Japanese paper & pressed (only about 30 or 35°) between heater plates.

- ① Regular aluminum arm and 008" sapphire only
- ② Cork cone, turned to fit dome, $1\frac{1}{8}$ ", cradled to inside of diaphragm, regular aluminum arm and 008" sapphire.

8/23/15.

Changed #65 recorder to 3 as
per previous page and tested
out. Did not show up well.

Worked with Taylor on Mr. E's
stopped w. buffin recorder.

Quartette came in afternoon.
Got down to work quickly &
made record of Quartette from
Riggett on third trial. Tried
others without improvement.
Made trials of No from
Faust.

8/12/10-

Work writing up synopsis of talks
at convention talks.

8/16/15.

Finished writing synopsis of
convention talks.

Wrote up report.

Worked with Taylor on Mr. Es
huff.

First trial of his Taylor had
public too long. Did not restrain
enough.

Started Record #65.

8/17/15
Finished record #65 &
tested. Very loud and stands
out fine. Full and natural
tone.

Made up and tested out
record #64. Is thin & sharp
and not loud enough as
compared with #58 & #65.

Tested out new record #67
made with buffers. With
no buffers touching was loud,
very full with peculiar timbre
like bango. With bottom buffers
touching became weaker & sharper
still with bango timbre. With
2 buffers, still weaker & sharper
& with unnatural timbre.

Miss Sangmund came. Tested
out records.

#65 showed up well on piano
but sensitive & sharpen voice

#64 too weak

#63 too sharp & hoarse.

① 8/7/15 -
Very loud, stands out.
fine. Full, natural. Quite
more sensitive than #58.

② With Miss Ingund
showed up well on piano -
big, full, loud, natural
stood out well. On voice
was not as good as ST -
did not sound as natural.

#65 - 8/17/15 -
4 minute recorder

Brass head - domed top -
1 1/4" diameter - knife edge pattern.

Diaphragm of Japanese paper,
impregnated with #1207
conductive transfer varnish,
.0025" thick.

Cork cone, turned to fit
dome, 1/8" x 1", fastened to
inside of diaphragm by
wetting with alcohol.

Regular aluminum arm
with .003" sapphire.

- 8/17/15
- ① thin, sharp, break in horn,
not loud enough.
- ② Thick Moss In ground, weak
thin and sharp on pins

8/17/15.

#64 - 1 minute recorder.

Brass head, domed top,
knife edge pattern, $1/4$ " diam.

Diaphragm of Japanese
paper impregnated with
thin solution of shellac.
Two thickness of this was
taken with cork cone turned
to fit dome between. These
were heated and thus
cemented together and to
the cone, making the
double thickness diaphragm
port.

Regular aluminum arm
with .008" stylus.

⑦

With Miss Ingram on
piano - loud & ~~staid~~ ~~sub~~
livel but sharper more
stringy than 65.

8/7/15

#63 - 1 minute recorder
Aluminum head. Domed Top
Knife edge pattern - $1\frac{1}{4}$ " diam.

Diaphragm of Japanese paper
impregnated with thin solution
of shellac, two thicknesses
of which with shellacked
cork turned & fit some were
heated and thus fastened
together with the cork
between, making diaphragm
about .005".

Regular Aluminum arm
with .008 sapphire.

8/18/15.

Went over to Kinlosscope Dept to
look up Kinetophone Film Records.
Found they had been put in Vault
#9 and in good shape.

Nick Taylor fixing up outfit in
Office Bldg.

Made Record # 54.

Miss Ingram came in afternoon.
Tried lot of piano experiments
particularly with different horns.
Found long horn #2 not so
good as #7. #1 Bony horn
about as good as #7 on
piano. Not on voice.

Got improved results with
Angle horn 22" from head
of piano. piano cover removed.
Recording machine raised up
on box. These recording
was best we have yet
obtained with piano.

#54 - Very low could
scarcely be heard.

Museum

8/18/15

#54 - 4 minute recorder.

Brass stand - Domed top -
knife Edge Pattern, 1 1/2" diam.

Diaphragm of Japanese paper
impregnated with thin solution
of shellac. Two thicknesses of
this with cork cone 1 1/8" x 1/8"
turned to fit dome, which
is shellacked, between are
beats and this fastened together
making diaphragm about
0.035" thick.

Regular aluminum arm
and 0.008" sapphire.

8/8/15-

Made test with record of Armagost
the master of which was repro-
duced once in first half and
not reproduced on last half &
per if this made any difference
as a master.

8/19/15

Teaching Supernovae all day.

8/20/15-
With Supervisors all morning.

Quartette came in afternoon.
Made several trials of Rigoletto
attempting to improve the
dramatic work. This was not
wholly successful.
Tried Trio from Faust. On
last trial Miss Rensen failed
because of snore from burning
trash and the Park.

8/25/15..

Wrote report.

Met with Mr. Reaming to see about directions to Dealers & Jobbers regarding horn and reproducer adjustment.

Met with Parkhurst-Reis & Halpin to agree on how this should be done.

Agreed to make up 2 sets of gauges, one plug gauges $\frac{1}{8}$ " & .955 to be used between reproducers cup and turntable. The other, bent gauge of metal .955 wide. In the first case the gauge will have to be used twice to determine parallelism. In the latter case, parallelism and correct height are determined in one operation.

8/24/15.

Made up records #60.

Miss Ingmund came in afternoon.
First tried out recorders, Miss Dr.
singing "Sweet Spirit Hear My Prayer".

#58 - Used as standard.

#65 - Louder, stands out better,
more genuine, not quite
as natural.

#53 - About as loud but not so
natural as #58.

#50 - Not as loud as #58. Very
full, soft and natural both
on voice and on accompanying
piano but sounds further back
in horn.

#60 - Sharper than #50. Stands out
better but good and true. No
tendency to bleats.

#44 - Like #50 in tone but not
as loud.

Next tried angle horn over piano
at various distances from
12" to 30". #58 Recorder seemed
to give best results. Curiously
#44 and #50 while not loud enough

8/24/15-
 #60 - Test with Miss Ingram's
 voice and piano with angle
 horn. With voice, trifle
 thinner than #58 but stands
 out well and holds well.
 With piano-angle horn -
 holds well, natural. Better
 than #57 until #57 was
 tightened.

An quartette does not
 show up well. Is
 thinner and sharper than
 #58.

8/24/15-
 #60 - 4 minute recorder
 Brass head - $1\frac{1}{4}$ " diameter,
 domed top, knife edge pattern.

Diaphragm of Japanese paper
 impregnated with shellac,
 two thicknesses with cork cone
 $1\frac{1}{2} \times \frac{1}{16}$ " between, cemented together
 by heating. About .005".

Regular aluminum arm,
 and .008" sapphire.

#50 - Miss Imgrud, singing
"Sweet Spirit Near My Boyer".

Tone and very natural,
but not loud enough, and
back in horn.

Rich piano - ample horn
abund. Bassy and too full.

8/24/15 -
#50 - 4 minute recorder.

Brass Head - Trumpet edge
pattern - 1 1/2" diameter.

Diaphragm of gold beater's
skin .001" thick.

Aluminum disc 1 7/8" x .0025"
waxed to diaphragm and
which is waxed another
aluminum disc 1 1/2" x .008".

Regular aluminum arm
and .008" sapphire.

#44 - Miss Ingrid singing.
"Sweet Spirit Hear My Prayer"

Full and natural. not quite
as loud as #50 - but back
in horn & dull.

With piano, angle horn
above full and beastly.
Does to pieces on notes
at all heavy.

With piano, regular position
full and natural but not
loud enough and back
in horn.

9/3/15 With coat of shellac
becomes louder,
clearer & stands out
more.

8/24/15

#44 - 1 minute recorder.

Brass head - Knife edge
pattern - $1\frac{1}{4}$ " diameter.

Diaphragm of gold
beaters skin, .001". Disc
of aluminum - $\frac{1}{16}$ " \times .0025"
waxed to diaphragm.
Another aluminum dome
 $\frac{3}{4}$ " \times .006" waxed to this.

Regular aluminum arm
with .008" sapphire.

9/8/15. Diaphragm tightened
& given coat of shellac on
outside -

as noise were too loud and blasted
all to pieces on piano made
this way. We never succeeded
in getting results to compare
with those made 8/18/15.

Truck #5 HL 4, 50 with piano
in regular position. Got fair results.

8/25/55.

Met up provisional directions
for setting reproducers for
jobbers, dealers and had copies
made by Mary.

Made up and tested out
reproducers #'s 54 and 64.

Met with Russ and Skip on
Disc Reproduction adjustment.
Decided not to mention the adjustment
for tracking in directions. Russ also
called attention to having lift rod
tight when adjusting and to slipping
and board between automatic stop
tip finger and carting when adjusting
height of this lift rod.

Decided that each should write
up set of directions and from
these should be compiled complete
directions.

#54- Trifle thin and sharp,
more so on piano than
on voice.

- With Mrs Ingren. Fair
sharper than #51 & 52.

With Quartette - too thin
and sharp.

Made
over
9/7/15

8/25/15-

#54- 1 minute recorder.

Brass head, domed top,
knife edge pattern, 1 1/2 diam.

Diaphragm of Japanese paper
impregnated with shellac.
two thicknesses of which are
heated and thus cemented
together with cork, 1" x 1/16"
tapered - between. - .004"

Regular aluminum arm,
ant. .008" sapphire.

#6H - Little sharp but louder
slipper than #5H. Held
for further test.

Further test with Miss
Sungund - sharp and weak.

8/25/15-

#6H - L minute recorder.

Brass Head - Domes Top
Knife Edge Pattern - 1 1/4" diameter.

Diaphragm of Japanese Paper,
impregnated with shellac.
Two thicknesses of which are
heated and thus cemented together
with cork cone 1" x 1/4"
between. Diaphragm
.004"

Regular aluminum arm and
.008" sapphire

8/30/15.

Met with Kappin, Reis and Parkhurst to formulate directions. Called away to wireless tele phone for Mrs. Mark and to meeting on cylinder records with T.C.C.

On return got information collected in meeting.

Wrote up provisional directions and had them typewritten.

Miss Osgood came in afternoon. Teled out following records - singing "Pie as a Bird".

#58 - Standard

✕ #64 - Sharper and not loud enough

✓ #52 - Natural and fuller than 64. Not as loud as 58 and does not stand out as well.

✕ #44 - Too full. Back in horn. Diction not good.

✓ #63 - Good and firm. Stands out. Loud as 58 and clearer.

#65 - Louder than any of the others. Stands out well but sensitive & inclined to bleed.

- #60 - Not as loud as ST but full and natural. Little back in horn.
Tuffe muchy.
- #50. Full and natural in tone but not clear and clean.

Quartette came in afternoon.
Mrs. Gatto had a cold. Applegate
recovering from vaccination.
Tried Quartette from Pysletts
with cow hair gardens as
directed.

These gave very much
quieter results - I did not
hear Room Ours before and
did not know what it was
until this was brought up.
Made up a master of this
also one of El Pais being by
Miss Benson.

Tried reorders 63 & 54
with Quartette neither
as good as ST.

Tried #63 and #50 with
Miss Benson. #63 sharper
than ST. #50 very full and
natural but back in horn and

~~missed. Did not find matter.~~

8/27/15

Met with Parkhurst, Kiepin
and Reis on Adjustment of
Disc Reproducer.

Read and specifications
by sentences and discussed
and corrected. Decided to
rewrite as corrected.

Decided to use large base
height gauge in place of
plain $\frac{1}{8}$ " one.

Quartette came in afternoon.
Miss Foster had a cold and
apparently was recovering from
vaccination as the quartette was
not in condition for hard work.

Fixed up with the new
hair sergers directed by Mr.
Edison. These gave very much
quieter results. I did not
know what room noise eyes
before or never realized the
standards without it.

Test Readers 63 & 64 with
Quartette. Results as good as

58. Made master with 58
to have blue record made to show
lack of room noise.

As the quartette could not
do full work, had Miss Brown
sing "El Bacis" with records
63, 50, & 58. #63 showed sharper
than 58, #50 very full and
natural - so natural that
all remarked - "does not sound
like a phonograph but like Miss
B. singing in another room".
Is too far back in room and
apparently muffled because
to make commercial records.

8/28/15

Note up directions for setting
reproducers.

Also write up book.
Looked into clippings by Miss
D. on voice production, control
and ~~regulation~~.

8/20/15

Note up reports.

Made up recorder #50.

Mrs Ingrenud came in afternoon.

Sorted out recorders #'s 58-50-9.

Singing and piano.

#50 (1) - Very full & blubbery. Natural tone to voice but shows interference with piano even when lightly played.

#50 (2) - (Tightened up). Still full & natural. Not so much inclined to blubbery. Back in horn-muffled. Not loud enough.

#50 (3) - Shellac run around free edge of cycled beaters skin. Less inclined to blubbery. Still full & natural but not loud enough & back in horn and muffled.

#58 - Used as standard.

#9 - Sharp-back in horn-not loud as 58. Clear, distinct well defined.

#50 as compared with #58 shows some
peculiar results.

The waves on #50 under the microscope
are apparently longer and deeper than
much 58 yet #58 sounds louder and
stands out of the horn much better.

- ① Very full and natural. Too sensitive. Blubbers with piano interference even though played very softly. Back in horn. Rather muffled. weak.
- ② As above except less blubbery and sensitive
- ③ As above but still less sensitive and inclined to blubbers.

#50 - 8/30/15 -
A minute recorder.

Brass Head - Knife-edge Pattern
1 1/2" diameter.

Diaphragm of Reed-Beaters
phen. .001". Disc of aluminum
.017" at center to .001" at edge
1 1/2" diameter.

Regular aluminum arm
and .008" sapphire.

- ① as above
- ② diaphragm tightened
- ③ five part of diaphragm
showing given thin coating
of cellulose.

8/6/15.

Made up records # 69.
P Met with Parkhurst, Reo, Constantine
and finished directions for setting
reproducers of Diamond Disc
phonographs. Had new man test
this out.

Made up records # 57-
Tested out records 57-58-69.
57 and 69 are very big as compared
with 58. 57 is fuller than 69.
Both are fuller than 58. Both
are louder & more sensitive
than 57. Sound fine on
piano.

#69 - Voice and piano. Very
loud and big. Little
sharper than S7 but louder
bigger & fuller more
seductive than S8. Good
on piano.

8/31/5-

#69- 4 minute record.

Brass Head - Domed Top.
Knife edge pattern - $1\frac{1}{2}$ " diam.

Diaphragm of Goodheaters skin
.001". Given thin coating of
shellac after being put in
place. Disc of celloid $1\frac{1}{2}$ "
.007" - pressed to fancy shape.
Coated with shellac to fasten
to diaphragm.

Regular aluminum arm
and .008" sapphire.

#57- Jaws and beams.
Larger, bigger feeler &
more sensitive than S.
Ruler on hand just of
chords. Fuller handle.

8/21/15

#57- 4 minute recorder.

Brass head. Knife edge pattern.
1 1/4" diameter.

Diaphragm of Japanese
paper with thin coating
of shellac after being placed.
Dise of celluloid 1 1/8" x .007"
slightly domed $\xrightarrow{\frac{.01}{18}}$

fastened war in center &
thickened at edges.

Regular aluminum arm
and .008 sapphire.

9/1/15-

Made up recorder #68 and
tests out. Seems to be fine.
Big - full. Hooks well.
Made up #67 recorder. Quality
similar to #68 - Needle slightly
nicked so does not give quite
as good a cut.

Miss Ingryd came in the
afternoon. Tested out recorders.
Ingryd - as follows:

- #58 - Used as standard.
- #67 - More natural than 58.
Tiple louder, Kitten more
sensitive.
- #51 - Loud. Very natural of
piano accompaniment.
Shows interference. Reclines
a little. Too sensitive.
- #61 - Not as loud as 58. Sharper,
thinner. Piano very thin.
Back in horn.
- #68 - About same loudness as
58. Clearer, clearer and
more natural. Brings out
individual characteristics of voice.

#68 - About same loudness as 58, clearer, cleaner, and more natural. Brings out individual characteristics of the voice better.

9/10/5 Made quartette record which was better - cleaner & more distinct than #58.

9/11/5.

#68 - 4 minute. Records - Brass Head, Knife Edge Pattern 1 1/2" diameter.

Diaphragm of Japanese paper .001" thick, was fixed on inside by shellac, disc of aluminum .003" x 18" and on outside disc of celluloid .007" x 18" pressed in die to fancy pattern. After assembly coat of thin shellac was given the exposed portion of paper.

Regular aluminum arm 3/16" sapphire.

#67- Bigger and more natural
than 58. Trifle louder.
Little more sensitive.

9/1/15.

#67- 4 minute Recorder.
Brass Head. Knife Edge Pattern
1/4" diameter.

Diaphragm of Japanese Paper
dipped in shellac solution
and dried .003" thick. On
inside is fastened by heating
a disc of aluminum .003" x
1/8" and on outside a disc
of celluloid .007" x 1/8" pressed
to faney shape in Keat's dies.

Regular aluminum arm
with .008" sapphire.

#50. Very full and natural. Does not stand out as the others and not as clean. Fine for piano tone.

#67- Rector. Too loud, Too sensitive. Natural quality.

Further test of #67 and #68 -
68 showed clearer, cleaner and more natural and better diction.

Neither showed good on direct piano recording

Discussed with Miss Ingrid
theory of equal interval or
temperament and natural
interval. Also of overtones
and harmonics.

9/2/15

Made our records #67 }
Built up records #69 }
#64 }

and tested out. All stand out
of horn well, are full, round,
loud and natural.

Mrs. Ingmund and Mr.

Deutsinger came in
afternoon. Tested out the
following records, Mr.
D. playing violin:

#58 Used as standard.

#68 - Louder. Stands out more.

#69 - "Boozy" - fuller sound.

#54 - Violin some what and
piano very much diminished
sharper than above. Makes
violin sound sharp and
metallic.

#50 - Better. Back in horn.
Both violin and piano
natural & full but muffled.

- #54 - Sharp & metallic twang to violin. Buried - not free.
- #51 - Very loud and big. Shows little interference. Sounds too loud or forced.
- #64 - Not as loud as 58 or 51 but true, natural tone. Holds well.
- #67 - Louder than 64 and trifle sharper. Good and natural.
- #69 - True - big - natural. Not as loud but sweeter than 67 or 68.

Again change to "Allegro Brillant" having more runs and higher notes.

- #69 - Excellent on piano. Low violin notes good. High notes squeaky.
- #51 - Louder than 69. Shows interference with piano.
- Voice. Mood singing.
- #69 - Natural, but not as good diction as 58

- 58 - Triple, sharper, but a
little better diction than 69.
68 - Triple, sharper than 67, but
cleaner. Diction based. Stand
out well.

It is evident that a good
full recorder is best for
piano and for piano.
For the voice where the
diction counts - a cleaner
recorder is desired.

#69 Very good with piano.

Good, full and natural
with facelin.

Full and natural with
voice but distortion not
as good as 68 or 58.

An quartette showed up
very well. On par with
#58 and 67.

9/2/15
#69 - 4 minute recorder.

Brass head. Knife edge
pattern - $1\frac{1}{2}$ " diameter.

Diaphragm of Japanese
paper to the inner side
of which is shellacked an
aluminum disc $1\frac{1}{8} \times .003$ ".
To the outside is shellacked
a celluloid dome of
.007" stock $1\frac{1}{8} \times \frac{1}{16}$ " raised
with small stake $\frac{1}{16}$ " at
center to diaphragm.
After setting in place
diaphragm had thin coat
of shellac.

Regular aluminum arm
and .003" sapphire.

#64- Not as loud as 67 &
68 but firm. Relps
well - and natural
in quality.

On quartette - not as loud
and clean and clear as 65
or 67 or 69

9/2/15.

#64 - Minute recorder.

Brass Head. Knife edge
pattern - $1\frac{1}{4}$ " diameter.

Diaphragm of Japanese paper
to which indented hollow
dome of eululoid, .005" stock
 $1\frac{1}{8} \times \frac{1}{8}$ " is shellacked to underside.
Paper then shellacked on
both sides. Ball of cotton
wax to fasten center of
dome to diaphragm.
Dome of clear eululoid - .007"
stock $1\frac{1}{8} \times 1\frac{1}{16}$ " fastened to
outside of diaphragm and
the diaphragm again
shellacked.

Requires arm and .008"
sapphire.

9/8/5.

Experiments with recorders #44

- 1st with loose gold-beaters skin
diaphragm. - Very full, sounds
forced. Back in horn.
2nd. Diaphragm tightened. Sounds
not little better & is cleaner.
3rd. Phellacked diaphragm. Resonance
cleaner, sounds more and
is louder.

Quiet up recorder #55 but did
not test out.

Put scales on horns to
get fixed distances for fingers.
Quartette came in afternoon.
First tested out recorders. Appreciate
singing.

- #58 used as standard.
#68 Louder and bigger than 58
trifle sharper.
#67 Natural quality. Not as loud
or sharp as 68.
#69 Not as loud or sharp as 68.
Natural quality.
#64 - Not as loud as above. Needs
more. even. 6155

#9- Back in horn. Sharp.

With Miss Rensen singing:

#9- Sharp. Back in horn.

#58- Louder and more natural than #9.

#69- Not quite as loud as #58. Natural.

#67- Natural. Louder than #69.

#68- Sharper and stands out but
unusually.

#64- Natural, Surfer shows

#44- Tone good. Distortion notes
clear as 67-68-69 and not
as loud.

Set up for quartette. Miss
Rensen had cold and not in
full voice.

Hayes could not make.

Distances	{	Applegate 10"	{	Baritone Right
		Moores 9"		alto R. Center
		Miss Rensen 14"		Sop. L.
		Hayes 4"		Bass Left.

Made trials with recorders

#'s 67, 69 & 58. These three
very nearly the same. Hayes
left bad. Did not make
rec'd through. Made trials
at Solos and Duets.

9/7/15-
55 - Better than 60 & 64
more natural but not
as good as 58-68 or 69.
Trifle plumpy - does not
ridg with plans.

9/8/15-
#55 - 4 minute recorder.
Diaphragm of Japanese
paper .001" first given thin
coat of shellac. Soft
aluminum dome .008" x 1 1/8"
shellacked on inner side.
Coating of shellac then
given outside of diaphragm
and celluloid cone .007"
x 1 1/8" x 1/8" shellacked on outside.
Another coating of
shellac put on outside.
Regular aluminum
arm and .008" eppohine.

7/4/15.

Built up record #60 and tested out. Too weak. Back in horn. Trill - natural - thin.

Built up #55 Record but broke diaphragm soon as finished

Miss Jungnickel came in afternoon
~~later~~ following records.
With Piano.

#58 - Used as Standard.

#60 - About as loud. Natural. Trill sharper. Not quite as mellow and round.

Ring test, striking middle C#

#58 - 15 seconds } Hard, percussive stroke.

#60 - 12 "

#58 - rang just as long with firm soft stroke.

#58 Used as Standard.

#60 Not as loud as 58 but trill more natural. Duration better.

9/4/15 - Preliminary test.

Weak, fairly natural
on voice, then on piano.
back in horn.

Not as loud as SS does
not pure as ~~musical~~. Sounds
"Woody" or a little more
plunky. Muffled on voice.
Further back in horn.

Sounds like Xylophone.

Piano "About as loud as SS. Natural,
trifle sharper. Not quite as
mellow and round".

Voice "Not as loud as SS, but
little more natural.
Diction better".

9/4/15

#60 - 4 minute recorder.

Brass Head, Damped Top.
Knife edge pattern - 1 1/4" diam.

Diaphragm of Japanese paper.
First given coat of Shellac.

Aluminum dome (tempered soft)
of 0.10" material, shellacked to
inside. Similar dome shellacked
to outside. Exposed diaphragm
both inside and out given
coat of shellac.

Regular aluminum arm
and .008" sapphire -

9/6/15 - Monday - Saturday.

9/7/15.

Note up report.

Runs up record #54.
Went aim to look at new studio.
Went over to see Farnell about Bell
Telephone Kinetophone Show.
Got Dawson from Mr. Edison.
at Hayes suggestion set him
to straightening up music.
Got Leroy Book and started
Miss Ingham on cutting musical
data clippings.

Miss Ingham came in
afternoon. Told out the
following records:

- 54s -
#58 - Used as D¹ standard
#68 - Bigger fuller - louder -
stands out better - has
not the fringe that 58
has - cleaner clearer.
#69 - Not as clean and clear
as 68 on voice. Piano
good and full and natural
but does not show the

#54 - Preliminary test. Little
spark, sharp back in
corn.

not as loud as 58 but
louder than 60. Quality
rather like 60 m. being
plinky. Does not stand
out.

9/7/10-

#54 - 4 minute record.

Brass Head, Domed Top
Knife Edge Pattern, 1 1/2" diam.

Diaphragm of Japanese
paper - .001" thick very
thin coat of Shellac.
Aluminum disc 1 1/2" x .003"
(Spring Steel) coated with
shellac & fastened to inside
by heating. Similar disc
fastened to outside.

Regular aluminum arm
and .008" sapphire.

differentiation 68 does. not
~~quite~~ as loud as 68 and does
not stand out as well but
trifle more natural.

#60 Not as loud as 58. Does not
ring as much. Sounds 'weedy'
or ~~little~~ more plunky.
Muffled or voice. Farther
back in horn. Sounds like
Xylophone.

#54, Not as loud as 58 but
louder than 60. Quality
rather like 60 in being
plunky. Does not stand
out.

#55 - Better than 60 or 68
more natural but not
as much as 68-69 or 58.
Trifle plunky.

#65 - Loud on voice. Piano shows
interference on heavy
chords.

#64 - Good and firm but does
not ring or show the
full natural tone of 58 or
69 or 68.

#50 Voice very full and deep in
horn. Goes to pieces on heavy
notes. Acheh, soft, muffled
tone.

Voice - Mr. Dawson.

#58 - Standard.

#68 - Stand out. Clean. Clear.

Natural.

#69 - Not quite as loud or stands
out as well as 68 but
natural quality.

#54 - Piano sharp. Voice natur-
al. Diction not as good
as 68.

#55 - Not as loud. Diction not
as good. Muffled. Does
not stand out.

#60 - Muffled and weak in horn.

#65 - Big sound - stands out on
voice but piano shows
interference.

#64 - Natural voice, Piano pretty
good.

#50 - Full and natural on
voice but not loud
enough. Goes to pieces

on low notes and shows
interference.

#63- ~~Shrill~~ on, piano, stands
out well. Give sounds
natural. Try further.

9/8/15.

Made up recorder #60 and
tested out.

Made up recorder #55 but broke
diaphragm on finishing.

Miss Imgrund came in afternoon.

Tested the following recorders:

- Piano -

#58 - Used as Standard.

#68 - About as loud, natural,
trifle sharper, not quite as
mellow and round.

Ping test striking middle C =

#58 - 15 seconds } Loud, persuasive
#60 - 12 " } strikes.

#58 rang as long on softer, firmer
strike.

Oice

#58 - Used as standard

#60 - Not as loud as 58 but
little more natural. Nelson

#63 - Firmer than 60 but not
quite so natural. Nelson

9/8/5 #60 Preliminary test

Sounds little sharp and
not as natural as ST.

9/9/5 - Piano - Natural - not as
loud as 69 but full &
natural, distinct & clear.

Voice - Voice natural
full.

9/8/5.

#60 - 4 minute recorder.

Brass Head - Domed Top.
Knife Edge Pattern - $1\frac{1}{2}$ diam.

Diaphragm of Japanese
paper, coated with shellac.
Aluminum discs, .003" \times 18"
Tempered - pressed radial
ridges, fastened inside
and out.

Regular aluminum
arm and .003" sapphire

- #58 - Natural. Needs, True.
#69 - Not quite as loud as 58.
Natural. Full. Has a slight
metallic accompanying
sound.
#68 - Good diction. Natural.
Shows up well.
Big - Heavy Piano work.
#68 - Big - clear - full - natural.
#69 - Not as clean full or
natural as 68.
-

9/9/15.

Made up recorder #51.

Saw about making Taylor attachment for Amelura machines.

Mr. E criticized screens as not thick enough. Saw Lock who says they are regular stuff. Got piece of cow hair. This is $\frac{3}{4}$ " to 1" broken fluffed out from bending but may be compressed to $\frac{1}{2}$ ". As the screen were not bent much, is probably full thickness.

Made up recorder #65¹ test. This seems - very full.

Miss Ingrend came in afternoon. Made following tests:

- +58 - regular set up -
- +58 - Used as Standard.
- +65 - Fuller but more muffled on voice than 58. Piano

9/9/15
#51- Preliminary test shows
sharp, weak, back in horn
but rods swell.

9/9/15- Piano Very weak and back
in horn. Not Commercial
Sharp - Metallic - Tummy. 71.5.

9/9/15
#51- 4-minute recorder.

Brass Head, Domed Top.
Knife Edge Pattern. $1\frac{1}{4}$ diameter.

Diaphragm of Japanese
paper, given thin coats
of Shellac. Two discs of
aluminum, .003" x 18", pressed
in dies giving radial grooves,
are fastened on each side of
this by Shells.

Regular aluminum arm and
.008" caphire.

9/9/15
#65- Preliminary Test.
Very big and full and
natural both on voice
and on piano.

9/9/15- Fuller but more muffled
on voice than 58. Piano
not as clean as 58 &
little further back in horn
but natural tone.

9/9/15
#65- 4 minute recorder.
Brass Head, domed Top.
Knife Edge Pattern - 1/16 diam.
Diaphragm of Japanese
paper, 2 thin coats of
shellac. Disc of aluminum
0.03" x 1 1/8" shellacked to
underside to which is
shellacked cone of cork
1 x 1/8" turned to fit dome.
Regular aluminum arm
and 008 sapphire.

not as clear as 58 and
note further back in horn but
natural tone. Note more
muffled.

#51 - Very weak and back in horn.
Not Commercial. Sharp. Metallic
gummy.

#67 - Good ring. Stands out - big-
loud - full - natural.

#68 - Note sharper than #67. Not
quite as loud. Shows out
individual notes better. Natural,

full.
#69 - Big - full - natural - about
like 68. Clearer and louder
than 67.

#60 - Natural. Not as loud as 69
but full, natural, distinct
and clear.

Voise
#60 - Voise full, natural. Piano
soft.

#69 - Note sharper than 60. Distinct
pretty good but tone not
as natural as 60. Thinner.

- #68 - Fuller and more natural than 69. Action good. Not quite as full as 60.
 #58 - Natural. Not as even as 67 or 68 or 69 or 60 but stands out better.
 #67 - Not as loud as 58. Natural. Stands out well. Piano does not show as much tendency to interfere as with 58.
 #65 - Natural - full - holds well even.

Piano with Angle Horn

- Horn 18" from piano.
 #65 - Too sensitive. Jumps out.
 #67 - Better - holds still better than 65 but still shows percussive effect.
 Horn 22" from piano
 #67 - Make.
 Horn over front of sounding board
 #67 - Little better. Not good.

9/10/15.

Made reproductions with blotting paper gaskets. Most of these obtained slight ripples on reproduction. Got one set very clean & clamped tight. This did not show the ripples but reproduced fairly well.

Duponts came in afternoon.
All feeling well.
Made trials of following records:

- #58 - Standard
- #60 - Hoops well. Full.
Natural slightly muffled
- #65 - Quite more natural
- #67 - More muffled. Does
not differentiate.
- #68 - Cleanest and best
direction of the lot
- #69. Does not stand out
as well as #68, with
more muffled.

Made records with #68
and contrasted this with

#54 and with precious
recalls. It seems better - clearer -
cleaner - more distinct and
more natural.

In three used tapes 3"
Mars 12"
Mars 8"
Applegate 9".

Noted that good interpretation
depended a great deal on
the leader and that on the
best results he should just
follow the singer who is
really taking the leading
part and lead all the others
by his way than directing
the time by his mechanical
idea of it. In this way
greater freedom and of seeing
is obtained while in the
other the time sounds, as it
is - forced.

9/11/15

Made up report.

Made up recorder #51.

#51 - 9/11/5-

Preliminary test
Sharper than 58. About
as loud. Clear, clear,
distinct on voice. Plans
clean but trifle sharp.
"Trifle sharper (thunder)"
"Sounds out better, cleaner"
"Voice announcement" trifle
sharper than 58. Shows
ping. Clear, clear.

Voice

Plans

9/11/5-

#51 - 4 minute record.

Brass head. Domed Top.
Knife Edge Pattern. 1/2" diam.

Diaphragm of Japanese paper
impregnated with shellac
.004". Disc of wood .017"
1/8" fastened to outside.

Regular aluminum arm
and .008" sapphire.

9/13/15

Made up recorded #54 and tested out. Preliminary test sounds good. Loud, free, stands out, clearer than 53. Triple sharps on voice clearer & cleaner on piano.

Mrs. Jas. S. Harper came about 11 AM & talked until 2 PM. He seems unable to hold himself to topic but talks about everything.

Mrs. Ingmund came in afternoon.

Made following records tests =

- ✓ #53. Used as standard.
- ✓ #57. Voice triple sharps. Piano sharps, shows ring & is clear.
- ✓ #54. Voice louder than 53. Piano louder & rings more but clear & distinct. Natural.
- #69 - more muffled and back in horn. Does not ring as 53 or 54.
- #67. Rings little more than 69 - much better on piano but not as good as 53 or 54.

#54 - Preliminary test.
Sound, full, natural.
Voice shows trifle sharper
and clearer and more
distinct than #58. Piano
shows little clearer and
clearer.

Clarin - "Pondus (Kan 58) Stands
out well. Natural, Good."
Piano - "Voice (announcement) louder
than 51. Piano louder &
purer more but clear &
distinct. Natural."

9/12/15

#54 - 4 minute record.

Brass Head, Domed Top.
Knife Edge Pattern. 1 1/4" diameter

Diaphragm of Japanese paper
impregnated with shellac.
.003" thick. Disc of wood
1 3/16" diameter .020" thick at
center turned off to feather edge
shellacked to inside.

Regular aluminum arm and
.003" sapphire.

#68 Slightly sharper than 67 or 69.
but plups more and is
clearer.

Voice
#68 - Stands out well. Natural.

#51 - Triple sharper. Stands out
better. Clearer.

#58 - Standard

✓ #54 - Louder. Stands out well.
Natural. Good.

Piano - Regular set up.
#54 - Plunkier on higher notes.

#68 - more muffled. Not as
clear as 54 more plunkier

#51 - more natural than 68.

#58 - Plunkier. Better definition.
#58 - ~~loudest of the lot.~~ Does not
stand out as well. Shows
trifle of interference.

Then tried taking piano
records under Grand Piano.
① using angle horn. Too loud.
② using long horn #7. Reasonable.
Rather natural, but not loud
enough.

③ Using horn #7. Good
but too loud in spots.

⑦ Small horn, instrument
under piano. - Seems like
music box. Delirgence.

9/14/15.

Made up recorder #50 & tested out.

Shows up about like #54. - Clear, distinct - little pharynx than #1 but less muffled. Tested out with Dawson. Clear & good.

Tried out Dawson on dictation. Does pronounce well yet and has slight stammer in his voice. Did better after awhile on dictation.

Made up recorder #52 & tested out with Miss Ingham on piano. Seems to be fine. Very natural & shows ring of piano.

Miss Ingham came in afternoon. Played for Hayes most of the time. Tested Recorder 50-52 against 68.

#52 has excellent surface - natural on piano and stands out of the horn better than any recorder I ever heard.

Made up recorder #51.

#50 Preliminary test.

Butter sharper than 50 last
cleaner & more distinct.

9/14/15.

#50 - 4 minute recorder

Brass head. Knife Edge
Pattern. $1\frac{1}{4}$ " diameter.

Diaphragm of Japanese
paper - given coat of shellac
on each side. Wood disc
 $1\frac{1}{16} \times .015$ " shellacked to outside
and disc & diaphragm
given further coat of
shellac.

Regular aluminum arm
and .008" sapphire.

9/15/52 ^{Pang} #52 - Rifle sharper than
68 or 69 but cleaner and
stands out. Plans most
natural of all.

Voice - Big - natural - stands out.

Test by Miss Ingund.
Plans clearer, cleaner, voice
natural - outstanding. Good
to put color into a speaker,
heavy or colorless voice.

9/16 - Sharper than 58. Stands out
better and is more brilliant
but has little patte (does not
hold as well), "Good diction"
"natural" - "clear".

9/12/52.

#52 - 1 minute recorder

Brass Head, Knife edge
pattern, 1 1/4" diameter.

Diaphragm of Japanese
paper given coat of
shellac on each side &
heated until dry. Disc
of mica 1 3/64 x .005 shellacked
to outside. Disc & diaphragm
given coat of shellac.

Regular aluminum arm
and .008" sapphire.

9/15/15 ^{Range} Sharper than 68 or 69.
Does mill. Does not ring.
~~size~~ Like 69 - Natural - feel
- clean - good surface.

9/14/15
#44 - 4 minute record.
Brass head, knife edge
pattern - 1/4" diameter.

Diaphragm of Japanese
paper given coat of shellac
on both sides. Disc of
mica .005" x 1 1/8" shellacked
to outside. Disc & diaphragm
given further coat of shellac.
Regular aluminum arm and
.008" sapphire.

9/15/15.

Made up recorders #3 67 & 69.
and tested out.

Tested out following recorders
with Mr. Dawson:

With Piano.

- ✓ #69 - Full, big, good diction. Stands
out on voice. Quite sensitive
Piano natural.
- #68 - Full-voice shows trifle more
nasal or "whiney" than 69. Piano
about the same.
- #44 Sharper than either of above. Halls
well. Piano trifle thinner &
does not ring.
- #52 Trifle sharper than 68 or 69
but very clear and stands out.
Piano most natural of all.
High Voice.
- ✓ #52 - "Big" - natural - stands out.
- #68 - Quite fuller & not quite so
loud w/ stand-out as 52.
- ✓ #69 Like 68. Natural. Fuller than
52 but does not stand out
as well. Shows tendency to

pians interference,
#44 - Like 67. Natural. Feel - clean.
Good surface.

Attended meeting at Mr. Leemings
office on setting reproducers.

Miss Ingmund tested following
recorders:

- Voice.
#58 - Standard.
#52 - Piano clearer-cleaner, voice
natural, outstanding, good to
put color into a female,
heavy or colorless voice.
#68 - Quieter, more even than 52,
more musical.
#67 - Less Ring - weaker
#54 -
#57 - More sensative than 68
#69 - Less brilliant than 52.

Taylor "made up diaphragms
of blotting paper. 8 of the
reproducers seem good.

9/15/16 - #69 Pearl Full. blq.
good diction. Stands out
on piano. Little irregular.
Coice Like 68. Natural. Well
than 52 but does not
stand out as well. Tends
to interfere on piano.
"Less brilliant than 52"

9/15/15.
#69. 1 minute record.

Brass Head. Knife edge
pattern - $1\frac{1}{4}$ " diameter.

Diaphragm of Japanese
paper, .001" given 5 coats
shellac. Mica disc
.005" $\pm 1\frac{1}{16}$ " shellacked to
outside. Disc & diaphragm
given further coat of
shellac.

9/16/15-
Tested out reproducers with
blotting paper diaphragms made
up by Taylor. 7 of these seem
good.

Try next gaskets of cork compo
marked

"Rubber Cork"
From Paddock Cork Co.,
1209 - DeKaeb Ave.,
Brooklyn, N.Y.

Made up records # 59 and
tested out. Sounds weak and
back in horn but fair
quality and natural.

Mico Inguand came in
afternoon. Tested out records
for singing and for piano
as follows:

#59 - Announce voice rather sharp.
Piano thin. Back in horn. Harsh
well. Not pleasing quality. Harsh
well. Not loud.

#68 - ~~Unusually~~ voice not as clean.
Piano bigger, fuller, more natural,
louder.

Voice - Miss Ingund.

#68 - Full - Natural - Clean - good surface.

#59 - Voice as loud & trifle more sharp
but natural. Piano accompaniment
not as loud. Also fine.

Voice - Mr. Dawson.

#59 - Somewhat back in horn. Shows
metallic twinge. Not loud enough.
Piano thin.

#58 - Fuller & bigger both on voice
and on piano.

#52 - Sharper than 58. Stands out
better & is more brilliant but has
slight metallic twinge "good diction
natural - clear".

#68 - Clearer than 58 more distinct. Not
so metallic & sharp as 52 -
natural - not as brilliant as
52.

Voice - Mr. Dawson "Minor".

#58 - Used as standard - full -
definition fair. piano natural
"diction good" - "natural" - good
quality.

- #68 - Triple sharper than #58. Excellent diction. More fire and life in voice. Fully as loud. Good surface.
- #58 - Triple fuller than #68. Round and stands out. Just a twinge metallic. Piano and voice clear & clean. "more outstanding - louder".
- #57 - Fuller than #68 or #58. Triple further back than #58 but natural and quiet - not so metallic - more musical. "less brilliant - less distinct - good quality".
- Piano Experiment - Machine high - #7 Horn pointed downwards & blew off.
- #58 - Little - plummy. Does not ring.
- #52 - Little but better definition & more natural. Horn closer to piano strings.
- #52 - Little better - louder & more ring.
- Horn still closer and in better focus -
- #52 - Little better - bigger & more ring.
- #69 - Big - Does not hold as well as #58. Shows blast. Back in horn.
- #58 - Big - Natural - Full - triple too much so that it is dull - Blast.
- #59 - Deeper than rest but back - natural - full - no blast - back in horn.

#59- Neaky - back in
horn - than 68 but
looks fine. Natural.
Good for blast. not
good for pole singing.

9/16/15.

#59- 4 minute recorder.

Quass Head, Domes Gap.
Knife Edge Pattern. 1 1/2" diam.

Diaphragm of Japanese
Paper. 2 coats shellac.
Hard disc .015" x 1 3/16" inside.
Mica Disc .002" x 1 3/16" outside
or another .002" x 1" even.
Coat shellac even outside
and inside after discs are
applied.

New tapered aluminum arm
and 508' sapphire.

[ITEM(S) FOUND IN BOOK]

What has become of the
~~fish~~ The essential elements

④ - Voice -
Tull - very natural &
good.

~~⑤~~
⑤ - ~~highest~~ angle horn
natural but shows
hammer blows

⑤ - angle horn 12"
- too loud blasts

⑤ - angle horn - 19"
- good and natural
~~slight tendency to~~

⑤ - angle horn 21"
good and natural

[ITEM(S) FOUND IN BOOK]

- ⑤8 - same closer
- loud & blasty

58 - same 15"
good and natural

65 - O voice
- Trill - loud -
big - stand out
but inclined to
blast

⑥2 - Voice -
natural - good loud
stands out

⑤8 - piano regular position
Good & natural

④4 - piano regular -
very full & natural
but back in horn

⑤0 - piano regular
Very full natural
more sensitive than
44 - goes to pieces
on bass notes

⑤8 - ^{close} ante Horn Piano
- very natural -
loud good

[ITEM(S) FOUND IN BOOK]

(58) - 18°-angle horn
good and natural

(59) - 19°-angle horn
good and natural

(60) - ^{angle horn} Rattles all 4
pieces

(60) - firm - soft
rather natural
spread

63 - Stands out - rather
natural - ^{firm}

60 - more natural - further
back in horn. Very
full & natural. Good.
Surface ^{via}

51 - Angle horn - ^{firm}
Natural tone but rattles
on some notes

60 Voice - Natural & full
slightly inclined to ~~do~~

60 - Voice - Stands out
well. Better than 30
but is not quite
so natural - but
still comparatively
good.

**Notebook Series -- Notebooks by Edison and Other Experimenters
Recorder and Recording Experiments -- A. M. Kennedy Books
Notebook, N-15-09-17**

This notebook is a continuation of N-15-08-02.2. It was used by Absalom M. Kennedy during September-October 1915 as a daily record of experiments and tests with phonograph recorders and reproducer parts. The daily record is continued in N-15-10-21. The tests involve various recording machine parts and instruments, as well as variations in the positions of voices, instruments, recording horns, and cow-hair reflecting screens. Some of the tests relate to cylinder recorders. Kennedy's notes also describe other projects, such as his work for Miller Reese Hutchison on a wireless telephone system and the preparation of a two-minute recording of Hutchison for the Panama Pacific International Exposition in San Francisco. There are also references to setting up experiments at the Brooklyn Navy Yard in connection with Edison's work on the Naval Consulting Board. Other individuals involved in the phonograph experiments include E. Rowland Dawson, Clarence B. Hayes, William F. Nehr, R. H. Simpson, and George J. Werner. Some of the work was done on orders from Hutchison or Charles Edison. Other experiments were based on Edison's direct instructions and used recording horns designed by him. Two pages of comments and instructions by Edison have been inserted into the book. The front cover is labeled "Recording Experiments Book #5 From Sept. 17, 1915 To Oct 21, 1915." The pages are unnumbered, and several pages have been removed from the book. Approximately 110 pages have been used.

Sept. 17, 1915.

With Taylor finishing up model for casting for goose neck for Ambrosola 30 machine to adapt for D.C.S. Recording.

Made up Shellac with castor oil to prevent getting brittle and chipping. When the shellac and oil (small amount) is dissolved in wood alcohol and allowed to evaporate this seems successful. When the shellac and oil are heated together however, the mixture remains somewhat brittle and its strength as compared with pure shellac is impaired.

Made up powder # 55

9/17/15 - Piano, Neck, Back in
form. Finger sharp. "High
notes lack tone"
"Voice" - weaker, sharper,
further back in timbre
no response to E♭

9/17/15

#55 - 4 minute recorder.

Brass head. Domed Top.
Knife edge pattern - $1/16$ diam.

Diaphragm of Japanese
paper - 2 coats shellac.
On each side is shellacked
2 discs of mica, net,
to diaphragm .002" x $1/16$ "
and over it .002" x 1".
Coat of shellac given
direct and diaphragm.

Tapered aluminum arm
and regular .008" gap filler.

9/17/15.

Miss Ingren came in
afternoon. Tested records
as follows:

Piano

- #55 - Meak-back in horn. ^{little}
sharp tone holds fair. ^{high notes}
#58 - Bigger & fuller ^{low tone}
natural - holds as well as

55.

Voice

- #58 - Natural - full. slight piano
interference. ^{deep tone}
quality - diction not clear.
#55 - Meaker - sharper. further back
in horn. Responds to high
notes. Only fair on low notes.

^{"Back in horn"}

Piano Experimental Recording

- #58 - Long Horn #2 - Small - weak
plunky.
#58 - Long Horn #1 - Bigger than
#2 but no ring. Extraneous
noise.

9/17/5-
*58 x 2#7 Horns - No ring. Dead.
Sounded like wood.
*58 x both long horns - Rattles. goes
to pieces but little more life
than above.

Listened to Regg's Quartet
- Record at night to compare with
past =

#68 - not as big or full or loud or
natural to the 58, but has
better definition. Clear & clean.

Criticism of Balance:

Piano loud at first. Use
sevens.

Baritone too loud. Also tenor
on quads. parts. Bring Sop.
parts closer to Horns.

Violin Record of this. Tenor phrases
part. Assent triplets in
accompaniment. Sopranos
looks to accent grief. Separate
voices stand out and express
separate emotions. Note holds
in time to accent.

9/18/15.

Worked on shellac with
oil to make more flexible.
Then oil is mixed with alcohol
and shellac then dissolved - this
effect seems to take place.

When shellac is heated and oil
mixed in later the resultant
mass is still brittle and has
less strength than the original
shellac.

Mounted needles in arms.

9/20/15

Wrote up report.

Got ready for Diamond Disc
Demonstrators. Machines -
note Books - Catalogues etc.
and saw them started off.

Tested out recorders for
Quartile this afternoon

Got out small screens to
put between singers to
keep hold down interference.
These are made of asbestos
about 1/8" thick, 3' x 2' and
hung between the horns.

Quartile came in afternoon.
With Miss Rensen tried out
pair of these "blindens" on
solo -

#69 - With blindens, Fuller &
quite further back in horn
than with ~~no~~ less tendency
to blast.

Tried out #54 - good. also 69
254. Last was the cleanest of
the lot.

#59 unblowt blenders was
sharper and did not hold so
well.

#58 with blenders stands out better
and about same fullness
as unblowt.

Mr. Boyle - Tenor -

R52 - Blenders - Clear & distinct

Quartette.

#52 - Clear - Clean - Sharp.

#54 - Fuller & more natural

#69 - Fuller & most natural.

#68 - Fuller back in horn
Clean. No tendency to bleed

#58 - Natural - big - full but
not so good enunciation
this.

#51 - Neat. back in horn.

#58 - Stands out - full - big
louder.

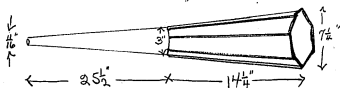
Mr. Boyle has good tenor
voice which blends well with

the others. Did not know
Quartette from Repetto or Trio from
Pauk well but learn quickly.

Further study of records made
with blinders as compared with
those made without at night
seems to show that these blinders
simply confine each voice to its
own horn so that horns do
not pick up side sounds &
interferences. In this way
apparently can work closer
without blast.

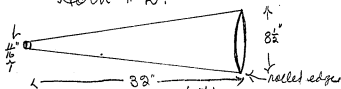
The records sound "a little more
horny" & not as clear & brilliant
as without blinders who not
sound as loud but on listening
from distance they are as
loud and clearer.

Horn #1. X



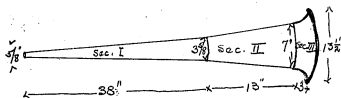
Small part of .017 zinc. Large part of .04 zinc. Folded edges rolled about $\frac{1}{8}$ " high. Mouth rolled about $\frac{1}{8}$ " diameter

Horn #2.



Made of .018 sheet tin
black enamelled.
Marked "Accepted Standard Amplifying
Horn for Tarkenton Machines".

Horn # 8.



Section I. Copper .008"

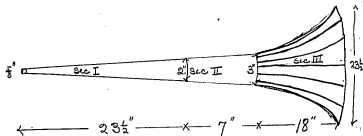
Section II. Sheet Tin .018" Black japanned.

Section III. Brass .0208" Rolled edge

Sections II & III from horn marked

"Accepted Standard Amplifying Horn
for Talking Machines."

Horn #5.



Section I Shet Fin .020"

Section II & III from 12 section Triumph Horn

9/21/15-

Made up recorders #569, 44
and tested out.

With Mr. Dawson tested
out #69, Recorder - open -
with hard rubber and with
asbestos blinders.

With Dawson

#69 - open - used as standard.

#69 with rubber blinders. Bigger,
fuller & more natural both
with voice and piano.

#69 with asbestos blinders - bigger
& fuller than open but more
muffled than with rubber
blinders.

With Hayes =

#69 - open - used as standard.

#69 - with rubber blinders.
fuller and more natural
and true.

#69 - with asbestos blinds.
fuller but dead.

Tested out following recorders
to find poor ones to tear
up and make over =

- #58 Used as standard. Fuel,
natural but poor surface.
- #55 - ~~Heed~~ Sharper, back in horn,
fringes, choked and muffled.
~~Peel up.~~
- #69 - Peel - clean - holds well -
natural - ~~Heed~~
- #50 - ~~Peek~~ - back in horn - holds
but thin - ~~Peel up~~
- #67 - Peek - muffled - back in
horn - slight fringes ~~Peel up~~
- #59 - Peel & true but back in
horn - natural. ~~Peel up~~
- #51 - Little louder than 59 -
natural - fine - ~~Heed~~
- #48 - Holds well. Loud. Clean.
Stands out. ~~Heed~~
- #44 - Does not heed - blasts -
stands out ~~Peel up~~
- #58 - ~~Peel~~ for surface.
Surface poor. But
was over & improved
a little but not good
yet.

Miss Imgrund came in
afternoon.
Made tests to confirm use of
blinders:

#52 Without Blinders

Mood - Clean - little weak-
natural. No. 5. Clean.

#52. With Blinders. Reverses.

Reverses - Fuller - more natural
both on. No. 5. & 4. Admon.

#58 - Without blinders Neck -
Back in horn -

With Blinders - Reverses
much more natural

#67 - With blinders - Reverses &
fuller than without and
steps tendency to blast
and holds down spots
in voices.

The use of blinders makes
the reverses fuller - louder -
little further back in horn
and seems to cover off
or voice change or other
defective spots in the voices

Reorder #1

Recorder #2. 4 min.

Outside Diameter Head	1 9/16"
Diameter Diaphragm	1 9/16"
Thickness Diaphragm	.002"
Material	Mica
Internal Diameter mica	3/4"
Diameter Aluminum Disc	1 9/16"
Thickness "	.004"
Arm Spaced	T section of aluminum
Arm Waxed to aluminum & edge of mica.	

#50 - Lead - natural -
Holds well. Fuller
than 57. Sharper than
67.

9/21/50
#50 - 4 minute Recorder

Brass lead. $1\frac{1}{4}$ " diam.
Knife Edge pattern.

Jap. Paper Diaphragm. 1
Coat shellac each inside
and out. Disc of mica
 $1\frac{1}{16}$ " x .0025" shellacked
outside. Coat shellac
and diaphragm and
disc.

Regular aluminum
arch and .008" paperphire.

9/21/15.

Round - full - true - Compares well with #52 but not quite so sharp. Held for further tests.

"Kite full & barrelly. Plans good and full".

(Miss D) As compared with #52 - "Diameter fuller - better surface".

9/21/15-

67. 4 minute Record.

Brass Head - Knife Edge Pattern - $1/4$ " diameter.

Diaphragm of Japanese paper .001" thick. Given coat shellac on each side. Miss D disc .003" \times $1/16$ " shellacked to outside. Coat shellac on disc and diaphragm.

Regular Aluminum arm and .008" sapphire.

#444 Does not feed well -
fringes & blasts. Dear
Up-

9/21/15.

#444 - 4 minute recorder.

Brass head, Knife Edge
Pattern - $1/4$ " diameter.

Diaphragm of Japanese
Paper .001". Given coat
of shellac inside & outside.
Mica Disc .003" x $1/4$ "
shellacked to outside &
~~coats~~ shellac over
diaphragm & disc.

Regular aluminum
arm and .008"
sapphire.

9/29/5.

Made up recorders #50 & #58
and tested out. #58 split diaphragm
on tightening up.

Tested out the following recorders
with Mr. Deason:

- #67 - Quite full & barely. Piano good
and full. good
- #52 - Sharper & cleaner & stands out.
Natural.
- #50 - Trifle fuller than #52 but loud-
clear & stands out. Good.
- #55 - Weaker than 50 or 55 but
natural and holds. Little
muffled.
- #69 - Louder than 55. Full and
barely. good
- #58 - Full and natural. Some
surface. Holds well.

Then tested out #67 and #69
recorders without and with
blenders:

9/23/15

#67- With Blinders:

Full & barrelly. Gives @
sounds

#67- Without Blinders:

Not so full. Much better.

Truer. Clearer.

#69- With Blinders

Full but better than 67

#69- Without Blinders

Thinner and not so good.

From this it seems evident
that the blinders improve a
sharper thinner record and
where a record already
full.

We have to try further
to find the value of the
blinders.

9/23/15.

Men in room to change
windows. No work on
records.

Outlined parts of history
for demonstrators to see which
they like.

With Demonstrators in
afternoon.

9/24/15 -

With Demonstrator all day.

Asked Mrs. Ingmund in
afternoon to make independent
test of effects of blinders.

The reports

"With blinders - more sensitive
and a little muffled"

"Without blinders - more natural
substanting and clear"

Comparison Records

58 and 69

#58 - Deep quality. Round. Full. Rig.

#69 - More musical, Ringing
Quality, full, warm, light
tone, better surface than 58.

Comparison of Records
67 with 58.

#58 - Clear, sharp, distinct

#67 - Sweeter, fuller, better surface

Test Record #69 with blunders.

- ① Blunders Close. Very big fuel,
smooth, about as long as
width, a shale covered.
 - ② 6" Away - Smooth. Medium
below 1 & 3
 - ③ ~~Without~~ - Rough.
-

9/25/10

Examination of Demonstrators.

9/27/15.

Finished grading papers.

Note up report.

Quartette came in afternoon:

All records at first were
poor - thin - hardly - muffled.
Afterwards opened up windows
and when temperature of the
room was reduced, records
became much better.

Tried out recorders 52-59-57-
54-50. Used 50 for most
work.

Tried with pinpoints.
blinders. With blinders bigger
and fuller than without.
Nubout, thinner than with.

9/28/15.

In New York all day.
Making up material for
Brooklyn Navy Yard experiment
at night.

9/29/15.

Made up records #50 after
Mr. Edison's directions.

Listened to record of Mrs. Tellico.
Is too loud and full for good
recording.

Will have to be careful in
future and get records not
so loud & better quality &
not sacrifice quality for
loudness.

In discussion with Dawson
and Hayes brought out
that our quartette sang
sings too loud & so they
"holler" it out for effect
whereas they should sing
more softly and put the
expression in it.

#51 Preliminary test.

Looks much better than
last as 50 and is a
trifle sharper.

9/29/15.

#51 - 1 minute records.

Rhass head - knife edge
pattern - $1\frac{1}{4}$ " diameter.

Diaphragm - Japanese
paper - 1 coat shellac each
inside and outside -
Cone of Cork $1\frac{1}{4} \times \frac{1}{8}$ "
sheepsked to outside and
whole given coats
of shellac over cone
and diaphragm.

Special arm of 004"
aluminum sheet and
028 wire. No fast
but wiggled directly to
cone. Regular 028"
sapphire.

Made following tests of
penders

Mr. Dawson - 10"
#50 - Big, full-bond, natural -
Clear - distinct. Pans
clear.

" " Natural - section clear, surface good
outstanding, bond. (Dagwood)

" Sharp - hard - open - firm - good (Dawson)

#51 - Further back in horns. not
as bond. Clear. natural.
Little sharper. Pans natural
but not as bond & further
back.

* Little more quiet than 50 - not as
bond as 50. Other characteristics about same.
Richer - more yellow cement (Dawson)

#51 WITH BLINDERS. Pans and voice
louder, fuller & more natural.

Seems to add more resonance
Lender - Sharper - (Dawson)

With Miss Ingund.
#51 - With Blinders. Little weak
a back in Horn - Natural.
Clean. Even.

#51 - Without Blinders. Apparently
as good. Little cleaner than
with blinders. Pans thin &
look plucky.

#50 - Big - full - Land. Stands
out.

Tests of Mr. Edison's Horn.
Mr. Dawson.

① #54 - Voice - musical. Clear.
Clear. Piano clear. Trifle
nasal.

#54 - With Horn at #4.
Voice - strong - nasal. Rank
Barred. Unnatural. Sounds
like pungi through horn.

#54 - With Horn at 10°.
Voice - only trifle louder than
① but nasal & hoarse.

Test of Mrs. Wisconsin
Miss Ingund.

#54 - Natural. Average Wind. Clean.
in

#54 Nick Horn. Nose uncovered.
Unnatural. Noisy. Nasal
Awful. Loud.

#54 - Nick Horn. Nose Compressed.
as before but little better
diction.

#54 - Nick Horn. Higher on face.
not quite as bad as before.
diction better but still bad
horn quality.

Test with Blenders

Mrs Dawson -

① #54-10" - full voice -
stands out. ^{Ray-Holmes - rather hard} Dawson

② #54-6" - softer voice -
Bigger & fuller but on
bleat. ^{Harder more noticeable} Dawson

③ #54-10" with blenders -
not quite as loud as ②
but fuller than ①. ^{② cuts more}
^{color - richer}

Small & Long Horn
#54 - with small horn #
Loud & stands out more
than long horn below

#54 - with long horn #1 -
thinner & better definition than
above - not quite as loud -

Sept 30 - 1915

Made up records #59.

Spent morning with Simpson on reproduces question.

The greatest trouble Simpson has is division of authority. That he has not the purchase and inspection of his raw material and all stages of his product.

In general, he seems to must have gone into the subject pretty thoroughly.

He has gotten up some very exact gauges for links and, for drilling bitting.

Not as loud as 58 but louder
than 51. Duration not as good
as 56.

9/30/15-
#59- 1 minute recorder.

Brass Head - Domed Top
Knife Edge pattern - 1 1/2" diam.

Diaphragm of Japanese Paper
1 heavy coat shellac each
inside and out.
Cork cone 1 1/16" x 7/32" shellacked
to outside and coat of
shellac over cone and
diaphragm.

Special arm of "port"
aluminum over .011"
wire - no fast. waxed
direct to cone. Regalan
.008" sapphire.

10/1/15-

Finished up warblers #65 and
tested out 65-58-57-57.

65 is loud, clear, excellent
diction.

58 is triller less loud - feels more
inclined to squeak - little less
clear.

#57 - Not quite as loud, diction
not as good.

#57 - Still less loud, clear, diction
not as good as 65.

#65. Lens - Stand out - clear,
slightly pitted, but very
natural.

10/1/5
#65 - 1 minute recorder.

Brass Head, Knife Edge Pattern.
1/4" diameter.

Diaphragm of orange paper
over two coats of special
.003" thick, white lacquer. Cork
cone 1/2" x 1/2" attached to
diaphragm and sand to
yellow dust diaphragm
and cone.

Special arm, of .001" aluminum
over .010" wire, shot fast.
Regular .003" top phire.

10/1/15.

Comparison R58 & 64
Dawson

#58 - Feel - soft - good surface
clean. Holds well. Natural
with as big as 64. Fringes on
full & pete.

#64 - Louder than 58 - Better direction
Stands out better - Big - natural
fine. Little sensitive & inclined
to fringe

#65 - Sharper & barker - more full - little
horn tones

10/1/15.

Made up recorder #64 and tested out. This recorder is very full, pensative, loud, natural. Should make good one for taking pictures.

Borrowed #9 Recorder from Geo. Harners and tested with stretched recorders. The stretched recorders have all qualities. Louder - not so loud - sharper fuller - clearer - more muffled. I do not see why we can not produce a stretched recorder to match any given recorder.

Miss Inggrund came in the afternoon. Made the following tests on recorders:

- ① #65 - Stands out. Little sharp, but natural from inside voice. Quiet, good surface

#64 - More natural. Louder.
Stands out. Fuller. Good
piano. good sound.

#58 Fuller than 65. About
same as 64. Not as loud
as 64 or outstanding. Holds
well.

Duet. Mixed mtd. - Blinders
#9 Little weak but very natural
and holds fine. Duet - soft -
musical.

#58 Stands out better - Louder -
more open - not as musical
and sweet.

#64 Cleaner and more natural
than 58. Fuller and more
muffled than 9.

Duet - Same. No Blinders

#9 Triple back in Korn. Natural.
Holds well. Triple louder
than 54.

#54 - Not quite as loud as #9.
Cleaner - less muffled.
Natural

Duct - Test of Blinders.

- #9- 3 Blinders.
Bigger - fuller - than without
blinders.
#9- 1 Blinder.
not as big or full as above
but little clearer & less
horn tone.
#9- without Blinders -
weaker, thinner & sharper
than above

Solo - Mr. D.

- #9- Full - natural - good definition.
#67- Fuller - bigger - covered
tone - not as good definition
#69- Full - little muffled & horn
tone - natural

Piano Experiment.

2 Horns close.

- #9- Natural but little fringe as
surface rattle.
#64- Louder - more ring - more
natural.

Piano Experiment with
blinders & side pieces

#50 - Feel & inclined to like it.

#50 - Thinner but cleaner & clearer.
Pretty good, piano record.

#50 - Fairer! away without Blinders.
Clean - clear - pretty good
piano except not much
ring.

#50 - WITH BLINDERS.
more ring & bigger, fuller &
sweeter & more musical.
Ring dies away slower.

#65 - WITH BLINDERS
Does not stand out as 50.
Sounds lost in comparison.
Only fair ring.

#65 - WITHOUT BLINDERS.
Little clearer & sharper. Not
quite so much ring.

#6H.

Prairie Exp. 1 Horn.
Reg but triple barrelly &
not as good as elite
2 horns back.

#9-

not as big and loud
as 6H.

Big - loud - stands out.
Full - natural - clean.
Seems better than SO on
voice.

10/1/15.

#64 - L minute Recorder.

Brass head, domed top.
Knife Edge Pattern - $1\frac{1}{4}$ diam.

Diaphragm of Japanese
paper sheelaed on both
sides. domed cork cone
turned to fit dome $1\frac{1}{8}$ "
 \times $\frac{1}{8}$ " - edge thin sheelaed
to diaphragm and
coats sheelaed over
cork and diaphragm.

Regular aluminum arm
and 008 saphire.

10/2/15.

In New York with Rehyless
installing Kinetophone at Grand
Central Palace.

10/4/15.

Began on Report.

Listened to records with Hayes.

Laid out for Taylor, Reed
Seymour, & Henshaw. Phonograph
on Chas. Edison.

Miss Kensen, Mrs. Fato, Miss
Imgrund & all present came in
afternoon.

On account absence of Mr. Rayle
Pipette Quartette could not be
done.

Made following trials -

^{Miss Kensen}
T 73° - 12' from horn. RSH-

#54 - Voice medium loud - trifle
sharp - surface good - heels
well - Round thin

#64 - Pans bigger and fuller - also
voice - Heels better than above.

- #65 - Piano bigger than 54 - more natural & fuller on voice.
Holds well. Galt. Musical
- #9 - Cleaner than 65. Piano's Oct. ~~and~~
well - piano - good & full.

Quartette of

Abbeigate	10"
Miss Bates	8"
Miss Rensen	13"
Ransom	7"

- #9 - Somewhat muffled & not clean
diction not good.
- #54 - About same loudness but
sharper than #9 cleaner.

Put each of the singers up
an inch

- #9 - Quite back and muffled.
- #64 - Clearer - clearer - louder - more
natural - stands out.

10/6/15-

Finishing up report.

Inspecting Kinetophone films
or Records of "Birth of the Kinetophone"

Laying out Chas. Edison Road
Phonograph.

In New York inspecting work
on Kinetophone installing for
Western Electric Co.

- DAWSON'S - SUGGESTIONS -

10/6/15.

Finished up report.

With Taylor on Charlissens land
Ode machine

Discussing with Dawson his
recording schemes. These are
good and while in some cases
would be reasonable.
Based on these want to try the
following experiments:

- ① See effect of singing against
side of horn sloping up the
mouth.
- ② Make device for recording
by longitudinal vibrations of
of rod.
- ③ Try sectional horn to confine
or pound out voice but thin
out to prevent being too loud.
Also one with cloth over head
to confine & use all tones.
- ④ Try sand on horn to show
resonance

- ⑤ Try piano recording with
several horns of different
sizes.

Miss Buckinder and Miss
Miss Smeyers came in
afternoon. I put out recorders
with Miss B. Also worked
Miss B out on recording,
trying to show her what to
play against.

Made following recorder tests.

#67 - (My Student ~~Standard~~) Standard.

#54 - Not as clean and clear as
Std. Fuller, natural.

#52 - Distinct, not as good as 67
Little sharper.

#9 - Fuller more mellow than Std.
musical. Not as sharp.

Cylinder #2.

#68 - Not loud as Std. Back in
horn. Clean.

= Std. Standard

#58 - Fuller, not as loud as Std.
not as clean & clear. Distortion
not as good.

- #9 - Rich - full - natural - does not start out as Std. but not badly back in horn.
 #54 - Very close to standard. About as loud. Clean & natural.

- Cylinder #3 -
 Standard

Std.

- #9 - more even & natural than Standard - Needs better. Rifle full.

- #54 - Diction good. Needs better than Standard. Rather mealy. ^{Recharge good.}
 On these occasions I picked Std. as best. 4 picked 9 & 1 " 54.

Cylinder #4 -

#67 - Standard -

- #64 - Not as loud. Needs better - not so even ring throughout register.

- #9 - Firm, even, little interference. Not as clean as 64.

- #58 - Firm. Needs well. Scales good even mealy tone.

- #57 - Cleaner - Loud. Needs well. Chords better than 58 but not so big & full natural.

Cylinder #5

Duct

#54 - Clean - clear. Holds.

#54. Rubber - shows interference.
Stands out better, more
natural.

#64 - Good - natural - holds.

Rest balance on Duct

mass B - 8"

mw. D - 12"

Temperature 72°

10/7/14
 Piano Test of Resorcinol
 T 72°

Cylinders #1

- ① - 9 - Full. Natural. Holds. Surface good. Ring fair.
- ② - Std. Kind. Fuller. more natural and nice ring. Surface good. Ring fine, fringed.
- ③ - 52 - as loud or louder than Std. does not hold as well. Fuller. more natural. Slight fringes. Ring excellent. Surface excellent.
- ④ - 64 - Big. full. Excellent ring. Excellent surface. Very natural. Holds better than 52 & does not fringe.
- ⑤ - 50 - Big, full. Fine ring, surface good. Holds better than 52 but not as well as 64.
- ⑥ - 68 - Not as loud or as much ring as 52-64 or 50 - little plunk. Fine surface. Holds well.
- ⑦ - 58 - Bigger & louder than 68 but not as much as 50 - more woody tone. Little surface fringes.

197/15

Cylinders #2

- ①-58 - Back in horn. Surface fair. Fair ring only. Sounds quite plunky.
- ②-68 - Weaker & back. Surface shows. Halts. Fair ring. Big. full. Loud. Made this time. Rings. Surface good.
- ③-50 - Not quite as big as 58 but still natural. Halts better than 58. Surface good.
- ④-52 - Big. full - but gives strained sound to strings. Surface good.
- ⑤-50, Does not stand out as much. Halts. Sounds more covered but full and natural.
- ⑥-9 Halts fine. Covered. Not as clear as 50-64 or 52. Natural. Surface good.

10/7/15

Cylinder #3

Spring Song - Piano.

Regular L.T. up
R&H - and Standard. Standard is
better. May not be so clean
but is bigger and more natural
and has the heavy notes

Cylinder #4

Spring Song - Piano.

Same as above except screen
put behind piano.
R - Std & 50. Standard is more
covered but richer & more more
mellow.

Test of Mr. Edison
Experimental Horn.

- ① Regular Resonator
- ② With Experimental Horn.

This horn responds naturally
to F. and with recorder seems
to respond to other notes.

It is not as loud as regular
#7 horn and requires singing
closer in.

10/7/15-

Deep pronounced harm tones
and by responding to certain
notes is not even.

Test of Mr. Edison's
Megaphone Harm.

Miss Symonds sang in #7
harm without abs. then
with megaphone harm.

Record showed that this
harm did not increase
volume but did improve the
diction in the case. Miss
Symonds by bringing out
the head and nasal tones.

10/2/5.

Finished up Glas-Gison's loud
diamond disc machine.

Made up recorder #68. First
diaphragm broke. Second O.K.
This recorder is weak and tapers
thin.

Miss Ingund came in afternoon.

Tested recorders as per previous
pages

10/7/15
#68 - 4 min recorder.

Brass head. Knife Edge
Pattern. $1\frac{1}{4}$ " diameter.

Diaphragm of Japanese paper
seals shellac. about 0.01".
Cork core, turned & fit dome,
cutt thick on edges, fastened
to outside with shellac and
core and diaphragm given
coat of shellac.

Regular aluminum drum
and 0.008" sapphire.

Rather weak. Back in form.
Hoofs small, Trefle thin,

10/8/15

Test Reapers :

- # Std. - Very loud. Full. Big. Some time
Hoofs. Distortion good.
- # 55 (new) - Not as loud. Trefle sharper.
Hoofs better. Natural.
- # 9 - Little louder. "Healy". Little
quieter than 55. Natural. Little
back in form.
- # 58 - Little tuning. Not as firm.
Natural. Little quieter than 55.

10/8/5
 Quartette Recording
 T 74°

#9 - Singing not as loud as before.
 Should more expression -
 smoother - more dramatic
 than we have done in some time.

A 10
 F 9
 R 14
 N 4

#55 - All closed up -

A - 9
 F - 8
 R - 12
 N - 3

Still not quite loud enough -
 smoother & more even than
 before. Balance fair.

10/8/5-

Tried out Rhodius #54 without
Blinders and again with blinders
on quartette. Quarters. Solvers
Chorus from Rhodius.

With blinders the edgework is
pronounced - bigger, heavier
feeler and at the same time
flatter.

Tried same with Rhodius #50
but this does not feed as
well as 54 - is mushier. #54
is nearly as loud and is
cleaner and clearer & more
distinct.

Quartette did good work this
afternoon. Sang with a great
deal more expression -
put intelligence and energy
into it.

Preliminary Trial. Scales were
natural. Rifle sharper
than #9 & not as muddy.

Tried out on Swatilla 10/6/15.
Not as loud or stand out as
well as #9. Very clean &
good surface but knife weak
and back in horn.

10/8/15

#55 - L minute recorder.

Brass Head, Domed Top...
Knife Edge pattern - $1\frac{1}{4}$ " diam.

Diaphragm of Japanese
paper given two coats
shellac. Cork cone
 $1\frac{1}{2} \times \frac{1}{8}$ turned to fit
dome and shellacked to
inside of diaphragm.
Cone and diaphragm given
coat shellac all over.

Regular aluminum arm
and .008" sapphire.

10/9/15

Worked on Dawson's longilabris
vibration recorder and made
preliminary test. Very weak -
too much for me.

10/11/15.

Note up report.

Saw Nkr and Nermus about getting Kinetophone record on Disc for Chas Dixon.

Experiment with Mr. Dawson on stopping end of Horn and singing through metal of horn.

Proved that this could be done. Piano fairly natural. Saise as if at end of big room.

Sang and played into various horns and tried to find to which notes they responded.

Took two of them singing with piano to see if they would record this note on records. They did not.

Test of Horns -

#7 Stand alone -

#6 - Trifle fuller but close.

Little difference.

#12 - Little fuller than #7 - Piano does

not come out as loud - sounds
lost.

#11 - Louder than L2 Bigger.
Bans - louder & clearer.
About same as #7.

#4 - not as loud as L1, not as
big. Full.

#6 Bigger - Louder than #4, clean
full good cleanness.

Mr. Dawson comments
#7. Stands out well. Good
quality.

#6 (Smaller) Not as clean as #7
otherwise little difference

#2 Song, Fuller than both 6 & 7
Not as clean as 6

#1 Song Very much like #2 Song
Only more so

#4 short - Little muffled but
good quality.

#6 ~~139~~ Dull but quality
otherwise good.

10/12/15.

Experiment with Dawsons
Auxiliary Horn.

- ① T72° R5H #7 Horn - 9"
① Regular. Used as Standard.
② With auxiliary horn. Fauder
but shows 'squeaks' or loud
spots. Not as even and
solid as without.

This horn was 7" diam to 9" diam
x 10" long.

Then tried with smaller auxiliary
horn. Made record sharper
and "squeakier".



Auxiliary
Horn.
Card boxed

Regular Horn.

Made up record #70. Very
full & natural but weak &
bass horn.

Preliminary Test =

Weak, soft, back in horn
but very full in tone and
very natural especially
piano.

"not as loud as #9. soft, full,
rich mellow, sweet musical.
Piano sounds well"

10/12/15

#70 - 1 min recorder.

Brass Head. Knife edge
pattern. $1\frac{1}{4}$ " diameter.

Diaphragm of Jap Paper
2 thin coats Shellac.

Cork cone $\frac{1}{16}$ " x $\frac{1}{16}$ "
shellacked to outside
and coat of shellac given
cork and diaphragm.
(Notice that diaphragm has
only little movement
inward before striking
lead; proving that shellac
on surface of showing
cork inward)

Regular aluminum arm
and 008" sapphire.

Treble louder, more brilliant
and sharper than 70. Rattle harder.
Tone. Piano good. Definition
excellent.

10/12/15.

#71 - 4 minute recorder.

Brass head - Knife edge
pattern - $1\frac{1}{4}$ " diameter.

Diaphragm of Jap. Paper
2 thin coats shellac. Cork
cone $1\frac{1}{2} \times \frac{3}{32}$ " shellacked to
outside and 2 coats of
shellac over cone and
diaphragm.

Regular aluminium arm
and .008" sapphire.

10/13/15.

Made up recorders 72 and 73.

Got ready for 2 minute record of MPT for San Francisco Exposition.

Saw about film for Names.

Made record of MPT for San Francisco.

Quartette came in afternoon. Mr. Stricklett as new tenor. After trials made records of Sigolito Quartette without and with blinders and masters for same.

The effect of the blinders is to make records bigger and fuller but, curiously, to cut down tendency to be irregular in spots. Record without blinders however is sharper and cleaner and apparently stands out more than with.

#72 Little praker speller than
#71 but inclined to be
metallic. Some horn tone.

" Louder than #71 - clear - good
diction - clear - quiet - standard.

10/13/15.

#72 - 4 min records.

Brass Head - Knife Edge
pattern - $1\frac{1}{4}$ " diameter.

Diaphragm of Japanese Paper,
2 coats shellac. Cork cone,
 $1\frac{1}{2} \times \frac{1}{16}$ " shellacked on outside
and cone and diaphragm
given two coats shellac.

Regular aluminium arm
and .008" sapphire.

#73 Very close to #9 - about
as loud and full but not
quite as firm

Not as loud and clear as #2.
More muffled & hurried.
Not as clean. Soft & melodious,
more mealy, starts fine.

10/12/15.

#73 - 4 min. recorder.

Brass Head - Knife Edge
Pattern. - $1/4$ " diameter.

Diaphragm of Jap. Paper
given 2 coats, phellac. Cork
Cone, $1/16$ " & $1/16$ " - phellacked to
outside and cone and
diaphragm given 2 coats
phellac.

Regular aluminum arm and
.008" sapphire.

10/18/15.

Mr. Stricklett's voice blends
well with others. 1/2 months
his words somewhat too
much for solo work but
in straight quartette is
good.

Tried out 7 minute recorders
#56 & 61 against 74 on
2 min records for mp. t.
#61 better than #56. Both
louder and sharper than
74 which is more nearly
these records have stood
up fine though some on
amp. t.

10/14/15-

With Demonstrators all day.

10/15/15
with Demonstrators all day.

10/16/12-

Examining Demonstrators.

Sketches recording stunt
for Telephone Transmission.

10/17/15.

Hutchinson's Record for
Telephonic Transmission.

10/18/15.

Correcting Examinations.

Repairing Records.

Preparing for Hutchison's
Telephone transmission stunt.

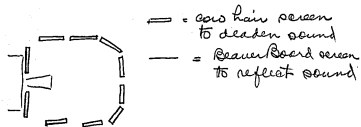
10/19/15.

Wish Mr. Dawson tested the following recorders:

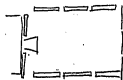
- #9 Used as Standard. Good-Full. Natural. Sweet.
- #70 - Not quite as loud. Soft, full, rich, mellow, sweet musical. Piano sounds well.
- #71 - Trifle louder, more brilliant and sharper than #70. Little harder tone. Piano good. Definition excellent.
- #72 - Little richer and fuller than #71 but more inclined to be metallic. Some horn tone.
- #73 - Very close to #9 - about as loud and full, but not quite as firm perhaps.
- #54 - Louder than #9 and stands out better. Trifle sharper and more metallic. Shows trifle more horn tone.

Test of Cow Hair against
Reflecting Screens.

#54 cow hair screens around



① As above, used as standard



② As above.

Prefer more even & level in tone
and more natural.

Dawson Rays

* With reflecting screens, tone
seems freer - not as restrained
but timbre, while more brilliant,
is not quite as rich.

Test with Luller Helmet

① Without R51 As standard

② With helmet. 1st test little farther away. Not quite as loud, softer, richer, bigger fuller tones, but lacked the brilliancy & crispness & distinctness of without.

2nd test both 10'. With was louder fuller and had some barely tone.

Will feel out records probably as Viburnos do when used at correct distance.

Test of Records to repair or tear up.

#9 - Used as Standard.

#50 - Big qu. - louder. Fuller more piano. Horn tone phonon. Does not feed as well.

#51 - Very weak & back. Trifle sharp in back of overtones.

#65 - Loud enough, rich, holds well
trifle back in horn. Slight
metallic. Slightly barrelly.

#59 - Not as loud. Holds well.
musical & mealy. Slight horn
tone. Lacks brilliance

#58 - Loud. Full. Stands out -
some surface. Slight horn
tone. natural. ~~Not as loud~~

#44 - Loud - Big - Full - Little
metallic - Horn tone - Sensation
beats, venter.

? #60 - Loud - Full - Rich - Holds
well - not brilliant - only
slight horn tone.

? #67 - Loud - big - full, trifle more
full than above. Slight
horn tone. Piano fine

#55 - Neaker & back in horn.
Shinner, Holds well. No
horn tone.

#64- Fairly loud. Full-natural.
Holds well - slight horn
tone tendency.

✓ #52- Loud - little sharper. Piano
loud & sharper. Clean. Holds.
Little metallic.

✓ #57- Loud - mellow - full - clean.
holds well. No horn tone.

Same with Piano

#9 - Used as Standard. Holds
well - tones natural. Good ring.

#50 - Loud - big full lust holds,
Big ring. Natural.

#51 - Not as loud. Full & natural.
Holds everything. Too soft.

#65 - Little louder than 57. Full
very soft musical

#59 - Natural. Fairly loud. Holds
musical.

#58 - Loud. Full holds well -
Big tone - Best yet.

- #44 - Loud Big - full - little
rattle. Very natural on
easy stuff.
- #60 - Fairly loud but not as
loud as 44. Shows little
blast. natural on soft parts.
- #67 - Loud. Does starts out.
Slight blast.
- #55 - Sharper. Not so big &
full & natural.
- #57 - Loud - full - natural - Does
well. Good ring. Does -
- #52 - Big - full but little rattle
- #64 - Natural - Big - full.

Tests of Records with
Mud Buchbinders.

- #9 - Piano - natural. Voice little
back. Clean, natural. Full.
Does well.
- #70 - Dust, not quite as loud as #9
Surface fine. Fine diction
not as brilliant or as much
life, triple uneven from moving
back & forth.
Compares well with #9.

#71 - Piano does not stand out as well. Voice sounds more hurried than either of former.

✓ #72 - ⁶ Fainter. Clear. Good diction. Natural but not as good diction. Clean, quiet. stands out.

✓ #73 - ⁶ Not as loud and clear as 72 more muffled and hurried. Not as clean. Soft melodious more mealy. Holds fine.

#74 - Big & fuller than any of the above. Louder than above.

Test with & without helmet.

① Without. Clearer - clearer

② With helmet. Muffled.

Dut Mrs B & Mr D.

① Without helmet - Clearer - Clearer

② With helmet - Not as clear as

Experiment Cow-Hair
Screens against Reflector

- ① With Cow-Hair Screens standard.
- ② With Reflecting Screens. Shows little
louder full & piano. Voices
all louder & more natural.
- ③ With Small Blinders. Trifle fuller
but not as clear & clear. Shows
OO tones in 7 places.
- ④ With Large Blinders. Not as loud
but separates voices excellently

Quartette Test with
Large Blinders

Used Miss Bushblinder, Miss Ingrid
Gayer & Dawson with H² & H²
Reddy's Board Blinders.

This report was not loud
but gave the finest quartette
I ever heard on the phonograph.
Absolutely no interference.
Everything clean.

Piano Test ^{10/20/15} With and Without Reflectors.

- ① With 40×40 Beaver Board Reflector -

Too loud. Shows interference and blast with good long ring.

- ② Without. Not so loud. No blast but, more of the "plunkety" effect, lacks ring.

Pianos moved back to greater distance

- ① With reflector - Shows a metallic rattle & interference.

- ② Without reflector - nearer & plunkety.

Same With Cow Hair Screens behind in place of Beaver Board

With reflector shows more ring than without.

Cow Hairs Sensitive Working at
Standard Distance & Set

Slightly louder than before. With
Reflector shows more ring and better
than without.

As alone but with horn raised
Reflector raised so as to more nearly
reflect in horn.

With reflector, best yet. more
natural & true & better ring than
without

With Large Reflector alone
same -

Not as good as with smaller
reflector alone, though with reflector
was better than without. This
may be because of the converse
effect of the smaller reflector.

With Small Reflector, piano
parallel with horn.

Loud than with piano in
usual position - Reflector shows
considerably very loud. Reflector
was put in position to reflect
maximum waves.

Same with Reflector more
nearly vertical.

Good, not too loud & blasty
true tone. Reflector shows
advantage in rings

Same with Piano sideways

Shows much & with interference
Better here without reflector

Piano Experiment
Horseshoe Crab Horn
12" from piano connected
to machine by 42 rubber
tubing.

1st part of record, Morkowski
Serenade. Fine. Still natural
no part. Righmenoff's Prelude -
Reacts throughout.

Same as above but no part
horn raised to 24".

Little or no apparent difference

Part 2 of above with horn
2'-6" from piano.

Does not show jump outs but
does show bad interference &
unpleasant

Same, Horn connected to
piano with 16" tubing. 12"
from piano

Comparison H.S. Horn @ 12" & 18"
12" louder & fuller. 18" little more
plunky.

As above with H.S. Horn at
18" without & with reflector.

The reflector, seems to make
softer, more mellow and even.

As above with H.S. Horn at
12", without & with reflector.

The reflector seems to make the
tone more mellow & note so
clear & distinct.

NOTE

Things Learned

- ① Use of large heavy board, blinders
gives quartette records without
interference
- ② Long rubber tube between horn
and machine increases fullness
and tendency to blast
- ③ Records can be made through
rubber tube
- ④ That the heavier board screens

Recorder # 74 - min

Outside Diameter	$1\frac{1}{16}"$
Diameter Diaphragm	$1\frac{1}{16}"$
Thickness Diaphragm	.0015"
Material Diaphragm	Mica
Internal Diameter Mica	$\frac{9}{16}"$
Diameter Aluminum Disc	$1\frac{1}{16}"$
Thickness	.006"
Regular Arm	Shelved to aluminum and to edge of mica.

Recorder #10 - Lmin.

Outside Diameter Head

2"

Diameter Diaphragm

1 1/2"

Thickness Diaphragm

.00175"

Material Diaphragm Acetyl Cellulose - 50% ⁽²⁾ sample

Aluminum Base, flat, welded to center of
diaphragm 1 5/8" x .0065"

Regular arm waxed center & end.

Needle .008"

Diaphragm stretched by cooling.

#50 Too sensitive
Tighten Diaphragm ①
Add Buffer or wax ②

#51. Too weak - Make over.

#65. Back in horn & heavily.
Try tightening.

#59 - Dull & lacks brilliance.
Tighten.

#58 - Hard or Cold tone. Not rich.
Surface.
Flatten sapphire

#44 - Sensitive, Tendency to blast
Put on wax or cork buffer.

#60 - Fair. Used for further test

#67 - Fair - Used for further test

behind the piano gave rattles,
& interference which were eliminated
by cow haw perching behind.

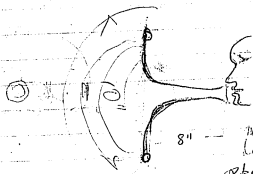
[ITEM(S) FOUND IN BOOK]

Kennedy

Make
①

Connected to stiffen

Tin - heavy gauge



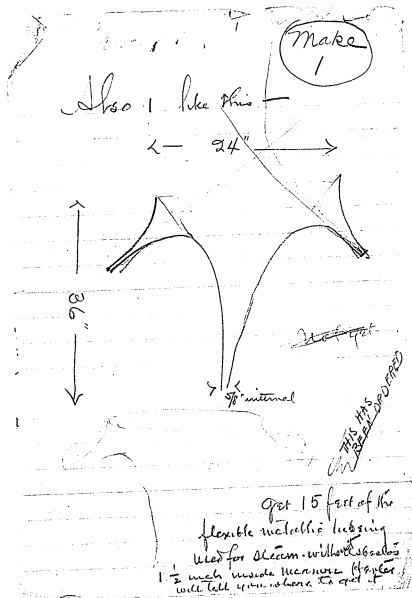
8"

Mouth piece
like Harmonica
Speaking
Trumpet.

Make one = Have singer

Sing without a then succeed
from Phone funnel 8" the
length of horn - sing again same
Vacuum

[ITEM(S) FOUND IN BOOK]



[ITEM(S) FOUND IN BOOK]

- singing against side of
- ① Horn. Stop mouth
 - ② ~~Keep~~ Stiff Diaphragm
to Still Rad + record
in this way
 - ③ Fibre board
head horn
 - ④ Try sand on horn
to determine resonance
 - ⑤ Piano recording with
several horns of different
shapes & sizes.

[ITEM(S) FOUND IN BOOK]

- ① Resonance to singer means ~~overtones~~ ^{not} the ability of one body to impress its vibrations upon another sonorous body which is in sympathy with it.

Horny sound in records may be caused by horn vibrating. Try deadening the horn by touching at edge and half way between. Sound should go direct from singer to recorder with any interfering vibrations between.

Could vibrations be transmitted to recorder by metallic means instead of air currents. Try singing against side of horn. Might have large metal diaphragm constructed similarly to recorder and connected with it by a thin steel rod instead of a horn as at present. Object being to eliminate horny sound.

Is there any material difference between sound waves and water waves. There being practically no way to tell how sound waves act in the interval

[ITEM(S) FOUND IN BOOK]

between leaving singer and entering recorder, it might be possible to put two blinders in water thus

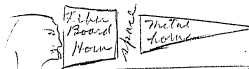


or half submerge a horn and after allowing water to become perfectly still, drop object in water about A and watch action of waves entering horn etc.

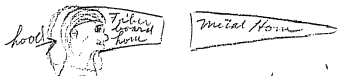
Round waves should be caught directly they leave the singer and rounded. However it has been shown the recorder will not stand full force of all the vibrations such as would be obtained by singing directly into the mouth of the horn. Therefore why not have segment of fiber board horn size & position of which would be continuation of metal horn, which would catch sound as it leaves the singer but with a space

[ITEM(S) FOUND IN BOOK]

- ⑦ intervening between the two to allow excess vibrations which are not wanted to escape. Thus:



Or possibly instead of F.B. horn suspended as above, have a horn which would fit over the face of singer fastened to his head and with cloth attached that would come down over his head like a hood. Thus all tone waves would be caught and rounded before going into horn



This arrangement might succeed in getting more nasal overtones into recorder without the brassy nasal sound the fireman's horn produced

[ITEM(S) FOUND IN BOOK]

Horn has a definite pitch as
may be seen by striking it.
Certain tones will cause it to vibrate
in sympathy. These tones would
produce more resonance (physical)
than other tones and consequently pro-
ject waves with greater force into
recorders. Can that be the cause of
blasts and the bad sounds produ-
ced by certain chords on the piano?

Ideal horn would be one of
great plasticity and a super-
human brain, that could anticipate
each tone that is to be precipitated
into it, and adjust itself into
such size and shape that would
be suitable therefor.

Could sand be used in any way to
determine when horn is in sympathy
with the tone and when not.

What is a soap film

[ITEM(S) FOUND IN BOOK]

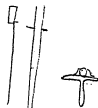
- ③ Violins all have their particular pitch C_3 but by much experimenting it has been made almost imperceptible and in playing a scale is not noticeable. Horns and recorders must have theirs too & these must also be made imperceptible. Are they now? Might not this cause the bad sounds noticeable on certain chords of piano. Or might not the fault be in the present construction of the piano, not noticeable to our ear but effective on the recorder.

Our ear passage also has its pitch and some notes seems more cutting to us in consequence than others.

Something of this sort is very noticeable in piano records. Friday I noticed the upper and lower registers some much clearer and penetrating than the middle register. Possibly the horns used were in sympathy with these registers. Perhaps a horn of different shape and size would be sympathetic with the middle register. Maybe the trouble could be helped by using several horns of different shapes and sizes.

[ITEM(S) FOUND IN BOOK]

- ~~57~~ ① Natural - little back in horn. Hairs fine.
diction good.
- 55 ② - not as loud - Gripe sharper - hairs fine
natural - back ~~back there~~
- 9 ✓ ③ - Gripe louder than 2 - Guller than 2 -
natural - back in horn
- 59 ④ - better timing. Natural - not as firm



**Notebook Series -- Notebooks by Edison and Other Experimenters
Recorder and Recording Experiments -- A. M. Kennedy Books
Notebook, N-15-10-21**

This notebook is a continuation of N-15-09-17. It was used by Absalom M. Kennedy during October-November 1915 as a daily record of experiments and tests with phonograph recorders and reproducers. An additional entry from May 1916 appears at the end of the book. The tests involve various recording machine parts and instruments, as well as variations in the positions of instruments, recording horns, and reflecting screens. Also included are tests of cylinder records reproduced from disc masters. Some of the entries describe other work by Kennedy, such as training Diamond Disc demonstrators and preparing for a showing of "The Birth of the Telephone," a kinetophone film about Alexander Graham Bell. Some of the tests performed by Kennedy were based on Edison's direct instructions, including a series of horn and recorder tests described in N-15-11-19 (Recorder and Recording Experiments—Miscellaneous Books). The notes indicate that Edison listened to several of the recordings and gave comments and further instructions and that some of the work was done to assist William V. Dinwiddie and Miller Reese Hutchison. Other individuals involved in the experiments include E. Rowland Dawson, Clarence B. Hayes, Charles W. Luhr, R. H. Simpson, George J. Werner, and experimenters named Cook, Smith, and Taylor (probably Henry A. Taylor). The front cover is labeled "Recording Experiments Book #6 From Oct. 21, 1915." The pages are unnumbered, and several pages have been removed from the book. Approximately 60 pages have been used.

10/21/5-

Teaching Diamond Disc Demonstrations
all morning.

Getting ready for BeeTel.
show in afternoon

10/29/15

Teaching Diamonds Duckumont-
nats all morning.

Quartette came in afternoon.
Work better together with
new tenor.

Made trials with #s 9, 5L
and 72 recorders. #5L shows
sharper and does not lose
quite as well. #72 sounds
little more muffled than
#9 - 9 decided on as best.

Made 2 masters for
blue records, one with
Large Beaver Board Records,
one without.

Tried Trio from Faust - Miss
Benson whistled too hard in
this and showed it in her
voice. Mr. Street also did
not know part, not good
enough for Master.

10/28/15.

Teaching Diamond Disc
Demonstrators.

10/25/15

With Diamond Disc
~~Demonstrator~~ all day
morning teaching - afternoon
examining.

- ① Shows up piano fine - full & round & natural. Loud, in record but without interference.
- ② About same as above but with piano a little more muffled.
- ③ Makes him too weak and back in horn.
- ④ Makes him too full. Muffles voice & kills the clearness & distinctness.

10/26/15

Assist Dimmock in Removal of Hydrogen test.

Recording Experiments:

Tested:

- ① Reflecting screen just behind singers. Piano behind screen with Keesee's Crab. Horn connected to recording machine with 12' pure gum $\frac{5}{8}$ " tubing.
- ② Same as before but with reflectors a little further back.
- ③ Tied 12' similar tube between baritone horn & recording machine.
- ④ Tied 15' similar tube between Soprano and recording machine, close up.

- ⑤ ~~Tube~~ sharper & cleaner and louder. Not as full and big as ~~with~~ ^{with} ~~shoe~~ ^{shoe} crab horn
- ⑥ Reflectors made record, louder, bigger and fuller at the expense of clearness & cleanliness made it also ~~stand~~ ^{stand} out of horn better. Without reflectors, thinner, clearer, & not as loud & further back in horn.
- ⑦ With crab horn only - weak, full, natural, very sweet and musical.

- ⑤ Tried angle horn on piano in place of Horseshoe Crab horn.
- ⑥ Comparative experiment, reflectors close behind singers and in regular place.
- ⑦ Piano record with 2 horns and Horseshoe crab horn & 12" tube - and with crab horn only.

✓ #50 - Tighten up to make less
sensitive & cleaner. *(much smoother)*

#54 - Leave temporarily.

#51 - Build over, putting
on less dampers.

#44 - Tighten up to make
sharper & less sensitive.

#65 - Leave temporarily.

#57 - " "

#59 - " "

10/27/57

#9 Used as Standard

✓ #50 - Loud, tendency to go to pieces
bigger. Fuller

✓ #54 - Not as loud & full as 50 -
Holds better. Packs definition
& shows trifle rattle.

* #51 - Packs volume - Horn tone -
back in Horn. Quality fair.

#44 - Loud, big, stands out
Piano good. Full.

✓ #65 - Average loudness. not
sensitive. Good quality.

#57 - Full - fairly loud - natural.

#59 - Trifle sharper. Holds
well. ~~Back~~ back in
Horn.

#52 - Tighten up -

#73 - Tighten up to make
sharper

#67 - Tighten up to make sharper
& brighter,

X #55 - ~~Tighten up & make equal.~~
Hold for Smash Test.

#58 Tighten a little.

#60 Tighten -

#71 - Tighten up -

#72 - Let alone

#52 - Loud - stands out. Slight
fringes.

#73 - Not as loud - little muffled
but holds well. Natural
quality.

#67 - Louder - muffled - covered.

✓ #55 - Peak - back in horn but
very natural quality.

#58 - Loud - covered somewhat
but full & natural

#60 Loud - - horn tone - little
sensative - full.

#71 - Covered & fringes, otherwise
natural & full.

✓ #72 - Louder & cleaner but has
slight fringes.

#70 - Does for further test.

#64 - Does for further test

#69 - Does for further test

#70 - Back in horn, covered,
muffled.

✓ #64 - Good & loud. Holds well.
Slight oo sound.

✓ #69 - Quite more sensitive than
64 but big, full & natural

Took #50 to build over.
Found first too sensitive & full.

① Tightened up.
Became firmer & sharper ✓
Red better & more natural.

② Put on new arm and
sapphire. Good cut.
Shows firmer & more
natural. True & clear.

③ Tried #50 against #9
with Mr. Goble on
pate. #50 better - has not

the squeaks - is firmer & cleaner
without any material
sacrifice of quality.

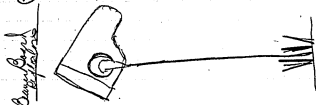
10/28/15

Made up record #57-

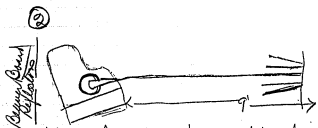
Tested out record #57 against
#9 & found it bigger & fuller &
more sensitive on voice.

Piano Experiment with 2 #7
horns & crab horn connected
to recording machine by 12'
pure gum rubber tubing, piano
of fresh machine.

① #57 Record



Very loud & full. Bass shows
up more than treble & overbalance



Still loud & full & big but
trouble shows up to better
balance.

- ③ Same as above but cut out
crab horn in middle of
piece. Effect was to make
sound very much thinner.
- ④ Same as above but harder
heavier work. Should
jump out on heavy bass
chords
- ⑤ Same as above on
"Spring Song". Still showed
jump cuts on A chords

⑥ Same as before but with
cow hair reflectors behind
piano in place of beaver board.
Better - cuts out most of the
jump-outs & blasts.

⑦ Test of tightening recorders.
1st as before. Field, loud, big
2nd as tightened. Cleaner - not
quite so full. Natural. Seems
good.

⑧ Test with #9 recorder against
#51. #51 Shows bigger & fuller.
#9 cleaner, clearer & sharper.

⑨ Test of 12' tube 9' piano
against 6' tube piano 5'
from recording machine.
Render, cleaner but harder -
not so full & mellow as tone.

(10) As before but with #7 horns
raised higher to give crab horn
more fullness.

It made full & mellow & cleaner
cuts out the tendency to blast.

(11) Same with crab horn nearer
piano to bring out fullness.
Very full but blabby.

10/28/15-

Big, full head, somewhat
perching but did not
blast. Very big & full
natural which breaths.

10/28/15-

#51 - 1 minute record.

Brass Head. Domed Top.
Knife Edge Pattern - $1\frac{1}{4}$ " diam.

Diaphragm of Japanese
paper - 2 thin coats of
shellac. Cork core $7\frac{1}{16} \times \frac{1}{8}$
shellacked to inside and
cork of diaphragm given
2 further coats of shellac.

Tapered aluminum arm.
Regular 008" sapphire.

10/29/15

Met for Mtg of family
in morning.

Nicholas sent over Mr. Trantwine
new separator for instruction.
Met also such things as thought
of value with him.

Trantwine brings out value of:

- ① Rubber gaskets of producers
to have longer life and suggests
sospotone liberally applied.
- ② That the diaphragms exposed
to damp deteriorate.
This may be cured by my
scheme of coating with
vaseline.
- ③ Need of loud Deamons Disc
for dancers and for motion
picture houses & parpatekman
would be good.

Quartette came in afternoon
in good shape.

Made trials with recorders
and decided #64 was good -
compared favorably with #9.

Made experiment with reflectors
close up against regular
position. Record was louder &
bigger but not as brilliant
with close reflectors.

Sang Quartette in B4 in
place of B3 as usual.
Quartette sang well & made
master for mould.

Fred Quartette from Lucia. On
third trial did very well.

Will have to arrange distances
better and get better balance
and less interference. (See)
Hayes and Carlson for extra
voices.

With Quartette left after Mr.
Strickland left tried experiment
of reflecting recording with crab
board to piano against regular.

In this the record became bigger
fuller and lost brilliancy as
before.

Study of Cylinder Records #1550
"Crazy Jones" and 28215 "Elegie"
phases:

To eye, apparently longer waves
on soprano than on baritone
piece. Under microscope the
apparently long waves become
overtones (from 6 to 12 to the
pitch wave).

This tenor record is "sharp"
the soprano record is "full".

It is apparent that the
presence of the higher
overtones produces sharpness
in records, and the predom-
inance of the lower over-
tones gives "fullness".

10/30/15.

Made up recorder #52 and
tested out. First arm high
too much surface. Put on
lower arm. Still some
surface. Quality good

- ① Arm rather high. Poor surface. Fuel, mealy.
- ② Arm lowered. Still some surface. Tone low, fuel rich.

10/30/15.

#52 - 4 min. recorder.

Brass Head, Knife Edge
Pattern - $1\frac{1}{4}$ " diameter.

Diaphragm of Japanese
Paper, .001", 20 thin coats
shellac.

Cork Cone $\frac{1}{32} \times 1\frac{1}{16}$ " shellacked
to outside and cone
and diaphragm given
4 coats shellac.

T section aluminum
arm, regular 008" sapphire.

- ① Diminished surface somewhat but not enough. Back in horn
- ② Surface improved but tone still back in horn. Needle shows marks
- ③ Tone triple better but still back in horn

53 - Tighten up.

11/1/15.

Note up report.

Marked out recorder #52.

- ① Made lower arm & reset needle.
- ② Made new arm & reset needle.
- ③ Reset needle

Decided to make over.

Parts of Recorders back from Horns.

- #9 - Used as Standard.
- #66 - Sharper - Back in horn. Thinner. Weak. Island.
- #58 - Full, big, natural.
- #62 - Little weaker than 58. Natural true. Not as big as #9.

#53 as before & Tightened.

#53 - Used as Standard.

#58 Tightened - Sharper on piano. Clearer, better definition, & held out.

better on voice.

11/2/5.

Made up record # 66 &
tested out.

Surface bad. Quality good.
Little sharper than #9 but
firm & true & stands out.

Put on new arm, needle.

#9 Used as standard

#50 - Piano body - as much as
to West. Voices loud, big
full. Too suggestive for
voices at this distance.

#51 - Holds better than 50 - Piano
full & natural. Voices full
natural.

#64 - Not as loud. Holds better.
Stands out nicely. Clean
clear. Little sharper than
any of above.

Mixed than back 2"

#9 - Used as Standard.

#51 - Louder than #9 - Halls were
quite fuller. More sensitive
than #9.

Experiment with & without Blinders.

#51 - without Blinders. Used as
Standard. Little muffled

#51 - with Blinders - Voices better
separated and distinct better.
Cleaner, less interference.

Experiment with 3, 1 and no
binders.

#51 - with 3 binders -

Very full. Sounds little weak
on voices. Pianos Good. muffled

#51 - with 1 Blinder -

Pianos becomes thinner & sharper.
Voices separate & become more
distinct. Cleaner.

#51 - without Blinders.

Pianos sounds fuller again. Voices
do not sound so separate but
are trifle bigger & fuller than
with 1 blinder but not as much as 3

Piano Experiment =
R50 - 2#7 horns - oval horn
connected with 6' - $7/8$ " rubber tubing
1st low piece
Good full - natural but not
enough ring

Experiment cutting out oval horn
Difference with short horn not
as marked.

Experiment oval horn and two
#7 horns on piano, 12' rubber
tube. Makes fuller - too
full perhaps.

Experiment = Miss Bushbinder & Miss
Imgrund playing same selection
to determine difference of
touch. Miss B - more brilliant
and resonant.

Experiment Miss B & Dawson
Singing 8 ft from 1#7 horns.
Sounds weak & far off. Balance
fair. Both voices heard.

Miss B. Dawson - 6 ft away
3-4 ft reflectors acting as funnel
to horn. Voices become fuller &
weaker. Piano by itself.

Piano Experiment - 10 ft from
machine P50 - 1st 7 horn
pointed at keyboard. Piano
sidewise to horn, top open.
3 Beaver board screens behind.
Very good and natural piano
record. Try out further.

11/3/15

Made up recorder #66

#66 too much surface. Not
as loud - further back in horn.
definition better than T. Rite
sharper.

#9 used as standard

Worked #66 over, flattening arm.
still too much surface.

Rut $\frac{5}{8}$ " x .003" aluminum disc
concentric, sheersaking to diaphragm.
Improves quality but still too
much surface.

Changed to flexion arm.

Experiment Plans 1st from
machine.

① Cow hair screens behind
plans.
Clear, clear, good tone - only
slightly plunky.

② Using beaver board / Reflection
behind plans.

Tone, bigger & fuller, than
with ear ^{to} rain screens, but
not as brilliant & trifle more
brilliant.

- ③ Same as above except adding
Crab horn on duplex connection
to #7 horn.

Not as good as before, seems
to damp out.

Test of Cut out value on
dulc.

- ① Regular Reading as standard.

- ② Use cut out value on
baritone. Makes soprano
much louder, bigger & fuller
when value has baritone
horn cut out.

Test of Records.

#9- Used as standard

#64- Not as loud. Quite back
in horn. Does triple run.

Very clear, & clean distinct
#66 (new) Not as loud as 9.
Very clear & clear. Surface
improved from former
trial.

#4/15-

All day with Demonstrator

11/5/5

Experiment with cut off values.

- ① With cut off values in each of 4 way connector



On Rigoletto Danville, 1st opened valve on Tenor solo. He was weak & back. Apparently not good.

- ② Made record regular way to compare. No better.
③ Made record -



Two way on machine. One arm having cut off valve to 3 way connector. Other arm to Tenor Horn.

This brings out the Tenor excellently but makes the other three thin and weak in Horn.

① Muffled - shows muffled tone -

② Used as Standard. Better - clearer - clearer.

Made 3 groups of bottles for Russia, East and fair.

Experiment Cut off valves on dust:

① With cut off valves.

② Without cut off valves.

11/6/15

Nick Demonstrations.

11/8/15

With Demonstrators.

Examination in afternoon.

11/9/15

Grading Examination Papers.

Tested records back from
Alpen St. Studio -

#9 Used as Standard

#53 - Louder, fuller, more
sensitive than #9. More
muffled. Handing natural.

#52 - Surface bad, sharper than 53
Quality good but surface injured.

#62 - Reg. full, triple muffled &
perceptive. Will stand tightening

#62 Tightened. Not as loud - sharper
metallic. Holds well. Even.

#62 loosened a little. Fuller than
above. Compares well with
#9 - is quieter - has less
surface and is cleaner.
Good Hold -

Test with Miss Buchling's
"Carry Me Back to Old Virginia"

#9 - Used as Standard.

#62 - Quieter - Cleaner - not quite
as loud - fuller more
mealy.

Same singing "afterward".

#9 - Used as Standard

#62 - Not as loud. Holds fine. Quieter
Cleaner. Fuller, not as rich
as #9.

#50 - Too big & full for voice. Fine
on Piano. Irregular on
voice.

#9 - Used as Standard

#64 - Cleaner - not quite as loud
fuller & holds better. Less
sensitive. Diction Good.

#56 - Clean but harder & not so
many overtones as 64. Colder.

Next "When We Are Married"

#9 - As Standard.

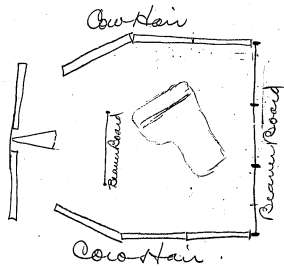
#64 - Cleaner. Better Diction - not
quite as loud.

- #62 - ~~Stands~~ out well. Clean.
Brilliant.
#66 - not as loud - further back
but clean & holds well.
#58 - Louder than 66 - Clean - clear
Shows piano fine. Stands
& holds.

Mr. Bonstrom came over to
make violin record.

Test

- ① #9 Recorder as Standard.
② #50 " much better on
violin. Bigger, fuller,
more natural.
③ #50 with 1 reflecting screen
close behind. Shows better
& bigger. Slight room tone.
Plans not good.
④ #50 - with 1 reflecting screen
behind violin as per
Sketch on next page.
This arrangement made
best record of the afternoon.



11/10/15.

Finished up Record #68
x tested.

#9 Used as standard.

#62 - Not quite as big and loud
as #9. Harder Coler, not
as natural & warm &
mealy.

#68 - Little surface. Not as
loud as #9 - but back in
Row - muffled - covered.

Revised to comparative
Ovalon & Edison Records
with Hayes.

Started Taylor on getting
ready for show Friday
afternoon for M. R. A.

#68 - Dome surface. Not as
loud as #9 - Back in horn
- muffled - covered.

Needs livening up.

② Makes it sharper, clearer
& stand out better.

11/10/15

#68 - 4 min. recording.

Brass Lead-Knife Edge
Pattern - 1/4" diameter.

Diaphragm of Japanese
paper given 3 thin coats
of shellac. Cork cone
1/16 x 1/32" shellacked on top.
Diaphragm and cone
given 3 coats shellac.

② Tread shellacking center.
in radial lines

Companson #9 x #66 made
over-
#9 Used as standard
#66 - Puller than #9. Needs well.
Darker - more covered.

Made test of bases of Mr.
Gregory x Mr. Jote.

Tested Transfer slide valve on
intermittent solo work.
Find that it brings out the
solo parts very much and
does not materially
hurt the duct parts.

11/11/15
Teaching Demonstrators
all day.

11/12/15.

Teaching, Demonstrations and
morning.

Quartette in afternoon -

Trid records #9-62-68-64.

Of these #62 was best.

Then tried quartette, solo &
sport using regular way &
which transfer valves - due to
tens to 3 way to others.

This made the tenor much
louder on solo, but it was
not good on the ensemble
work sounded like - tenor
and 3 others - tenor too much
prominence & others smaller).
I tried 2 records of Dix (little from
Lucia on 6 way tubes. These
showed up better than
corresponding record on 4
way tubes.

11/13/15.

Examining Demonstrators
all day. May did not
start until after 10 am. so
did not finish until late.

Mr. Edison outlined testing
work he wanted on
horns.

Taylor owes to Spauld to
get film & record of
Andrew Carnegie for
M.P.

11/15/15.

Set up disc and recording machines for Mr. Edison's Horn experiment.

Made 29 records which Mr. E. listened to and graded the horns according to sensitiveness.

In this the long smooth brass horn (#2) came first followed by 10 fetal morning glory horns.

Horns of peculiar shapes and the usual recording horns were rated very much lower.

11/16/15.

Write up report.

Worked on rearing horns
for Mr. Edison's experiment.

Found #48 - Music master best -
#2 - Long Brass - second and
#58 - Kinetophone - third.

Made these at 3-6-29. ft

The sensitiveness of horn
seems to depend on the
bell area of mouth and
smoothness of inside. As
proved by angle horn - crab
horn etc, and by the fact
that the angular Music Master
horn stood first - the
angle & trump make little or
no difference.

With Miss Buchlinder &
Jawson tested out Paragon
horn against #7. Paragon

louder than #7 - as loud
at 24" as #7 at 10". On solo
not as good - tone, whereas
clean & clear & musical.
On Sust. - tone much bigger -
(not so Rpy.) but liable to
run together & not as musical
soft & pleasant.

Tested with Mess. Beckhinder
#38-48 x 2 horns against #7.
These were louder, & to
quite about same loudness
used #7-10"

#2-24"

#38-20"

#48-20"

#7 was very full & not clear
and clean.

#38 - trifle better but not as
clean as #7.

#48 - Best of lot but still perhaps
not as clean & musical.

11/17/57

Finished up horn records for Mr. E.

Wrote up suggestion about parabolic reflector for horn.

Got out other horns to test out.

Mr. E. outlined tests of F and A horns against solid partition. Had Taylor prepare for this.

Discussed with Simpson, Smith, Kuhn & Cook methods of making up files for #2 horn.

Miss Imgrund came in afternoon. Made pole and dust records comparing #A - 2-38-48 horns. A @ 9" - 2 @ 20" - 3 @ 18" - 4 @ 18".

#2-38 & 48 Horns are bigger & fuller than A on pole and bigger & fuller but much less clear and distinct on dust.

Made duct tests with
slide valve - butterfly valve,
transfer valve & plain Y.

But little difference noted.
Apparently, the slide valve was
the best of the values as it
showed best on the straight
just past and as load and
full as any on the solo.

11/18/15

With Demonstrators all
day

11/19/15

With Demonstrators are
morning:

Quartelle came in afternoon.
Fred experiment recording
with #7 horns and with
#7, 38, 48 & 25 horns.

Mrs. Edison entered & listened
to these tests and decided that
#7 was best horn, and that
the Quartelle in this was
much better than with
regular #7 horns.

Fred #9 against #6 & decided
and decided that #9 was
best.

Fred singers with Beaver Road
reflectors at back & decided inst.
as good as without.

Fred singers with saw him
reflectors at back & decided back of all.

11/20/15

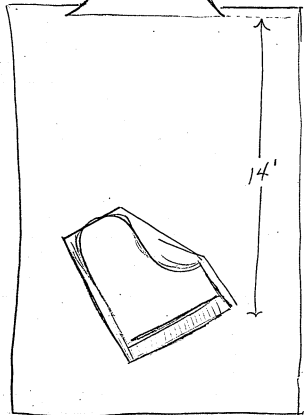
Examination of Demonstrators.

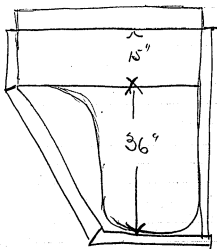
Mr. Edison outlined horn tests particularly with curved or bent horns.

Had Taylor make up new horn 5" diam x 40" long as Matter mullen said his quartettes were weak with.

Tested this against #7 (a) It is less sensitive and fuller.

5/5/16





5/16
 Piano 14' from Stern
 Record #132.
 Test #1
 Piano Closed

①

Test #2
 Top open 6"

Test #3
 Top open 12"

Test #4
 Top open 18"

Test #5
 Top open 24"

Test #6
 Larger portion of top removed. 36"

Test #7
 Both portions of top removed 57"

Test #8
 Front part of top removed 15"

②

Piano 7' from Horn
Rearden 13R

Piano Closed 1
2

Open 6" 3

Open 12" 4

Open 18" 5

Open 24" 6

Open 36" 7

Open 57" 8

Front Open 15"

cas

[ITEM(S) FOUND IN BOOK]

November, 1915
Edison Blue
Amberol Records

CONCERT LIST

25 cents each

O Dry Those Tears, *Tenore Del Ring*
Helen Stanley No. 28218

Supra, orchestra accompaniment

This old-time favorite made an introduction to any one who is at all familiar with drawing-room songs. Some have called this the most appealing melody ever written. Certainly it does grip you in a way that few other songs of its kind ever could. Helen Stanley was a member of the Century Opera Company in 1914.

Una furtiva lagrima—*Elle d'Amore, Gaiuso*
Dionisi Karl Jörn No. 28217

Tenore, orchestra accompaniment

Jörn's wonderful rendition of this rich, lyric melody must be considered in every way a masterpiece. His voice reaches perfectly, and the record he has made is worthy of a very frequently repeated hearing.

REGULAR LIST

35 cents each

Absent, John W. Metcalf
Hardy Williamson No. 2728

Tenore, orchestra accompaniment

This is one of those few drawing-room songs that are still favorites after a long popularity. It is known and loved in thousands of homes throughout the English-speaking world, for few songs of its kind have ever made such an appeal as this one. Its keynote is simplicity of melody, and tenderness of sentiment.

[ITEM(S) FOUND IN BOOK]

**Ah! Could I But Once More So Love, Dear,
W. Miller** Emory B. Randolph No. 2740

Two, soloists accompanied

This German song is popular both abroad and in this country. It is particularly a very fine melody, and gives Emory B. Randolph full scope for the display of his technical and artistic ability.

The Call of the Motherland, Edward W. Miller
Frederick Wheeler and Male Chorus No. 2747

Soloists, soloists accompanied

The great European war has inspired all Candians with a deeper love for the Mother Country, and the present selection voices the leading sentiment of Canada today. The melody of the song has a sturdy, swinging rhythm. Frederick Wheeler is heard to fine advantage.

Chasse aux Papillons—Serenade, L. Fautoune
Weyert A. Minor No. 2755

Two, soloists accompanied

A brilliant "Butterfly Chase," or in some instances. Several dainty tunes are heard, all graceful, light, and airy as the fluttering butterflies they represent. Weyert A. Minor is accounted one of the best flute players in the country. He threads the maze of these wiffling passages in a way that imparts him a true artist's touch.

Da's What I Calls Music
Edna Bailey No. 2743

Soloist

As Edna Bailey herself states, this selection gives us old negroes full scope, this selection gives a character of this kind by the very name. Yet we get a perfect impression of the old mammy happily recalling the times she bore—the pathos, and then the joy and enthusiasm of a simple old negro.

Firefly (My Pretty Firefly), Gwynne and Pinedale
Irving Kaufman and Chorus No. 2774

Two, soloists accompanied

This song has, in the parlance of Broadway vaudeville, "gone big." It is recorded here in a most interesting and elaborate style. Shows and the beating of top-tenns and replies to the verse, and the catchy melody of the refrain is partly carried by bells in a way that is exceptionally lively and charming.

A Flower of Italy, D'Agostino
Ludore Moskowitz No. 2729

Two, soloists accompanied

Ludore Moskowitz has never made a finer record than this one—giving a brilliant, artistic interpretation of D'Agostino's violin composition, "A Flower of Italy."

Garden of Roses Waltz, Ella Brooks
New York Military Band No. 2730

In contrast to the many modern dance pieces that use brass ensembles these days, is this charming little waltz by Ella Brooks. It is well named "Garden of Roses." First comes a short introduction, and then a waltz theme that is lovely and with every full harmonic, suggesting the roses the composer has given the piece. This is a very pretty melody, and is followed by a second theme, quite short and brisk and vivacious. Then comes a *legato* waltz, really the prettiest of all.

If You Can't Sing the Words, You Must
Whistle the Tune, Herman Dornazi
Billy Murray No. 2733

Two, soloists accompanied

You can gather some faint idea of this song from its title, but you'll never believe how amusing it is until you hear the record. The tune you are required to whistle is extremely catchy—a typical lullaby. The main interest of the selection lies in its clever words.

Mother Macree, Oloof and Ed
Walter Van Brunst No. 2738

Two, soloists accompanied

One of the best of all the Channery Oloof ballads. It was sung with great success by Oloof in his play, "Barry of Hollywood," "Macanille" and "The Isle of Dreams."

My Big Little Soldier Boy, Nadine Carolyn Churn
Glen Ellison and Chorus No. 2737

Soloists, soloists accompanied

Since the outbreak of the European war, "soldier" songs of every kind have been most popular. The present selection, however, is far and away above most of the kind in merit.

My Hula Maid—The Passing Show of 1915,
Leo Edwards

Record and two, soloists accompanied

The New York Winter Garden has gradually become "One of the sights of the metropolis." It is a place that every stranger of the city feels he must visit. "The Passing Show of 1915" proved one of the most popular of all the annual "reviews" that are the features of this playhouse. "My Hula Maid" was one of the big hits of the 1915 "Passing Show."

Perla Waltz, Artini Guido Giardini No. 2742

Two, soloists accompanied

In its original vogue from this brilliant waltz-song has been a favorite for many years. As whistled by Guido Giardini it makes a novel and enjoyable record. Giardini is one of the cleverest whistlers before the public, and this selection gives him ample opportunity to display his remarkable talent.

Porcupine Rag, Chas. J. Johnson
New York Military Band No. 2739

As one enthusiast put it when hearing this record for the first time: "This is the real stuff—not an imitation. And so it is—regular old-fashioned ragtime of the ragtime variety. The selection is played in a dashing style that carries you along with it."

Ragging the Scale—Fox Trot, Edward B.
Clypstone Jaund's Society Orchestra No. 2734

For dance

This extraordinary piece is well named "Ragging the Scale." In very truth it runs it, shreds it, and tears it into little bits. As you might surmise, the melody is extreme, to say the least. The selection is recorded in strict dancing tempo, and a goodly of "Trot." For dancing you will find the record ideal.

The Belle Hunters
Billy Golden and James Marlowe No. 2723

Two, soloists accompanied

Both Billy Golden and James Marlowe are old-timers at black-face comedy. On this record they each describe the marvelous sales they have collected. And in their own words, it is "funny collection."

[ITEM(S) FOUND IN BOOK]

Spring Flowers, H. Matizani
Mary Carson No. 2733

Open, arched accompaniment
A brilliant coloratura song, light, jolly, and wholly charming. Mary Carson's flexible voice is heard to fine advantage, and she sings the many difficult cadences and trills that embellish the song in a way that shows her a true artist, and commands your admiration.

They All Did the Goose-Step Home, M. M. Scott and Goffrey
Irving Kaufman and Male Chorus No. 2741

Four, arched accompaniment
It is surprising how many clever popular songs originate in England—surprising to us in America who think we are the only ones capable of writing song like this. This one was first published in London, and became a great favorite in English Music Halls. The words are amusing, and Irving Kaufman makes the most of them.

Treasure Waltz—Gypsy Baron, Strauss
Hungarian Orchestra No. 2744

One of the best waltzes ever written by the greatest waltz writer of them all—Johann Strauss. It was originally brought out in the operetta, "Gypsy Baron," half a century ago, and ever since has been popular.

Twinkle Waltz, Fanderful and Bainer
Charles Daub No. 2731

Triplet, arched accompaniment
Charles Daub has been a favorite with Edison owners for many years. The selection he plays here is a brilliant, kindred number, whose light, graceful waltz melody are well described by the name "Twinkle Waltz."

Twinkle Waltz
William Smith and Walter K. Kolomoosky No. 2736

Harmonized
The Hawaiian guitar is made of koe, a wood that grows on the islands and is considered sacred. The guitar is played, not by pressing down the strings, but by sliding a steel crosspiece along them. This produces the curious tone quality that makes the crying, pleading music of this instrument unlike anything else on earth.

We'll Never Let the Old Flag Fall, M. F. Kelly
Frederick Wheeler and Male Chorus No. 2746

Barbar, arched accompaniment
This is a modern British patriotic song—Canadian product. Strains of "God Save the King" are cleverly woven into the music of both introduction and refrain.

Where the Water Lilies Grow, Harry Green
Royal Fish and Chorus No. 2735

Four, arched accompaniment
First popular in England, this song was introduced in America by a well-known jumbo show in vaudeville, and published here in 1910, becoming a great favorite. In the instrumental introduction between verses, and also at the end of the selection, a xylophone and violoncello are heard, each playing a different melody.

Woodland Songsters—Waltz, C. M. Ziehrer
American Symphony Orchestra No. 2737

This record transports us into the heart of the woods—the woods in summer, with the birds singing in the trees, a bubbling brook beneath, the sun shining through the leaves and all nature in her brightest mood.

You're My Girl, Mohr and Sillemann
Walter Van Brunt (Introducing Helen Clark) No. 2745

Four, arched accompaniment
The verse is a fine show waltz theme; the refrain has a sort of "Hockaday" rhythm, and is one of the catchiest tunes heard this season. The second refrain introduces Helen Clark, and gives a novel effect to the rendition.

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FINANCIAL CONTRIBUTORS

We thankfully acknowledge the vision and support of Rutgers University and the Thomas A. Edison Papers Board of Sponsors.

This edition was made possible by grant funds provided from the New Jersey Historical Commission, National Historical Publications and Records Commission, and The National Endowment for the Humanities. Major underwriting has been provided by the Barkley Fund, through the National Trust for the Humanities, and by The Charles Edison Foundation.

We are grateful for the generous support of the IEEE Foundation, the Hyde & Watson Foundation, the Martinson Family Foundation, and the GE Foundation. We acknowledge gifts from many other individuals, as well as an anonymous donor; the Association of Edison Illuminating Companies; and the Edison Electric Institute. For the assistance of all these organizations and individuals, as well as for the indispensable aid of archivists, librarians, scholars, and collectors, the editors are most grateful.

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**Thomas A. Edison Papers
at
Rutgers, The State University of New Jersey
endorsed by
National Historical Publications and Records Commission
18 June 1981**

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The original documents in this edition are from the archives at the Edison National Historic Site at West Orange, New Jersey.

ISBN 978-0-88692-887-2

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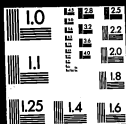
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